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MEDICAL SCIENCE.

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JULY 1, 1893.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*A Case of Pharyngeal Spasm.*[a] By H. T. BEWLEY, M.D., F.R.C.P.I.; Assistant Physician to the Adelaide Hospital, Dublin.

THE subject of this paper was a gentleman—H. S.—who had lived many years in India, whence he came home in 1885. He generally enjoyed good health, but some time ago (I could not make out the exact particulars) he consulted a doctor in Liverpool, who is reported to have told him he had a clot on the brain. He was always more or less a nervous man. There was a doubtful history of former alcoholism.

On September 27, 1892, H. S. went to bed in his usual health; next morning, on wakening, he found himself unable to swallow. He sent for Dr. G. Scriven, who thought he was suffering from some functional trouble. However, he continued unable to swallow, and on this account was sent to the Adelaide Hospital, where he was admitted under my care on the evening of September 30th.

Next morning (October 1st) I saw him. He was a pale and small

[a] Read before the Section of Medicine in the Royal Academy of Medicine in Ireland, on Friday, May 19, 1893.

made man, but not thin. He seemed nervous and his muscles were tremulous. When lying in bed he suffers constantly from a kind of hiccough, which comes at irregular intervals, sometimes two or three hiccoughs in rapid succession, then a pause, or longer interval. He lies quietly in bed and reads Thackeray to himself. When he tries to swallow he seems to suffer great distress. He says he can get solids down better than liquids. When he takes, say, a piece of bread, he chews it vigorously, gets the morsel into the back of his mouth, and makes swallowing movements; the morsel disappears from his mouth, and would seem, as far as one can see, to have gone down to his stomach, but he exclaims that it is in his throat, and that it is choking him; a quantity of fluid, thick and mucous, gathers in his throat, and gurgles and rattles excessively. There is some laryngeal spasm, occasional inspirations being whooping and laboured, but there is no real difficulty in breathing. All this time irregular and convulsive movements are going on, he becomes more and more excited, throwing himself about the bed, and beating his chest with his hands; he rolls from one side of the bed to the other, and thrusts his head over the side of the bed, and is about to vomit or spit up the food, but with pains we check him and urge him to try and keep the bread down. At last he will not be restrained, and spits up or regurgitates some, but by no means all, of the bread he had taken, and with it some stringy mucus. When this is done, he lies back quiet in bed, and seems easy. During all this time his pulse is good and quiet, and there is no lividity of the face. The food ejected from the mouth is faintly acid.

With fluids such as milk or water the attempt to swallow is more feeble and quickly over; he does not seem able to get it down at all; the fluid seems to excite spasm of the swallowing muscles, and is quickly spat out, with a quantity of mucus. In the case of bread the struggle may last for six or eight minutes.

He was thirsty but not hungry; tongue clean; abdominal viscera normal; bowels rather confined; heart and lungs quite normal; pulse good; urine contained some mucus and a little albumen.

Last night (Sept. 30th) he was given $\frac{1}{6}$ grain of morphia hypodermically, and slept well.

This morning I applied a Faradic current to his neck; the muscles reacted well, but there was no effect on his powers of swallowing.

In the evening he again got $\frac{1}{6}$ grain of morphia. His temperature rose to 102° F. without apparent cause.

October 2nd—He slept well and quite quietly during the night; there was no hiccough.

This morning temperature is again normal. He is in just the same state as yesterday. He is now unable to swallow for four days. I got him, with considerable difficulty, to swallow 3 or 4 little bits of bread,

but the struggle seemed to tire him, and he could not be prevailed on to take any considerable quantity; he could not drink at all.

His general condition is just the same as yesterday; reflexes (knee-jerks, &c.) normal; there is no evidence either of motor or of sensory paralysis. I tried if pressure on the phrenic nerves in the neck would have any effect on the hiccough, but it had not. I again applied the Faradic current to his neck, and arranged that he should get nutrient enemas every 4 hours, each containing 30 grains of potassium bromide. At night he got his hypodermic as usual.

October 3rd, 6th day of illness.—This morning I waited outside the ward door and listened. There were occasional hiccoughs. I went in and stood beside him. They increased greatly in frequency and violence at once. It looked as if there was violent chorea of the diaphragm and muscles of deglutition with occasioual slight spasm of the larynx. The hiccoughs are at irregular intervals—frequent and violent. I got him to try and swallow a little raw meat-jelly. He got about four mouthfuls down. The struggle lasted from six to eight minutes, and then about half the meat came back. The nutrient enemas are well retained—four oz. of milk, eggs, &c. He is strong, and seems comfortable except for the trouble in swallowing. Temperature 98°. His bowels have not moved for three days. I got him to swallow two colocynth pills.

10 p.m.—This evening his condition is still unchanged. He can speak quite well, but is interrupted from time to time by the hiccough. He has tried during the day to swallow a little meat-jelly and bread, but has only got a very little down. His bowels acted well after the pills. His pulse is rather weak.

As he had now been six days unable to swallow, I passed a stomach tube; it was about ½ inch in diameter, and passed with extreme ease into his stomach. As soon as it was down a little of the meat-jelly he had swallowed came up through it. I then poured down about 1½ pints of milk mixed with two beaten-up eggs. He did not suffer from the presence of the tube. There was no spasm of throat or larynx, but occasionally he retched, and I had to put my finger on the top of the tube to prevent the milk coming back through it. When the tube was taken out he was quiet comfortable, and lay quietly; his pulse was stronger than before the feeding.

During the next two hours he vomited at intervals, getting up the greater part of the milk, but complained of no distress. About 1 o'clock a.m. he asked the night-nurse to tuck him in, and said he was comfortable and would go to sleep. When she had done this, she went to another part of the ward. On coming to him in about 10 minutes, she found his breathing had stopped. She called the resident, Mr. F. Wynne, who, running in, found him quite dead, artificial respiration, ether, &c., proving of no use. His death had been perfectly quiet.

I made a *post mortem* examination next day. The arachnoid was slightly thickened in places over the cerebral hemispheres. The convolutions near the great longitudinal fissure were in parts slightly atrophic, the sulci being unusually wide. The floor of the 4th ventricle seemed finely granular, and in the medulla some of the nerve cells were found, on microscopic examination, to be full of brown pigment. With these exceptions the central nervous system appeared perfectly healthy.

The larynx, pharynx, and œsophagus were perfectly and completely normal, as also were all the abdominal organs.

The mucous membrane of the trachea and bronchi was bright red in colour, and was coated with some brown slimy mucus. The lungs were healthy; the heart was healthy. Both right and left sides contained a little fluid blood.

In this instance, therefore, morbid anatomy throws no light on the case. In speculating on the nature of the trouble in swallowing, it occurred to me that the case might be one of paralysis of the œsophagus, and that the presence of morsels of food in this test tube might be the cause of the spasms of the surrounding parts. Paralysis of the œsophagus is a rare affection. Gowers says (Diseases of the Nervous System, Vol. II., p. 269), "In very rare cases such disease has caused difficulty in swallowing, simulating stricture." Ross says (Diseases of Nervous System), "Paralysis of the œsophagus sometimes occurs as an isolated affection. The morsel of food passes from the pharynx into the œsophagus, but owing to the failure of the peristaltic action of the latter, it remains fast in the cervical portion of the tube or regurgitates into the cavity of the mouth. When it remains fast in the œsophagus, it may produce compression of the larynx and cause dyspnœa and the other symptoms indicative of the presence of a foreign body." The causes which Ross mentions for this affection are—peripheral diseases (rarely), basal affections of the brain compressing the cranial nerves, and local affections of the pons and medulla. Osler (Principles and Practice of Medicine), writes: "Paralysis of the œsophagus scarcely demands separate consideration. It is a very rare condition due most often to central disease, particularly bulbar paralysis. It may be peripheral in origin as in diphtheritic paralysis. Occasionally it occurs in hysteria. The essential symptom is dysphagia."

If some such paralysis of the œsophagus was part of the disease in the case I have described, yet there was much more in addition.

The hiccough and occasional laryngeal spasm went on quite irrespective of the presence of food in the œsophagus, and the clinical features of the case looked, as I have said, extremely like what one would imagine to be a violent chorea of the muscles of the larynx and pharynx, and of the diaphragm.

I am also at a loss to account for the sudden death.

NOTE.—Since writing the above, Dr. J. M. Purser has suggested to me that this case was one of some disease of the centres in the medulla, the centre for deglutition being the first one to be affected, and that subsequently the respiratory and cardiac inhibitory centres became involved, hence the sudden death.

ART. II.—*Clinical Report of the Rotunda Lying-in Hospital, for Three Years, from November* 1, 1889, *to October* 31, 1892.[a] By W. J. SMYLY, M.D., Master, and J. H. GLENN, M.D., Assistant Master.

DURING the three years comprised in this report 3,602 women were confined in the hospital, of whom 37 died. In considering the death-rate in a lying-in hospital it must be borne in mind that the number of difficult and dangerous cases admitted is abnormally large. The institution must, however, bear the responsibility for all cases of septic infection contracted within its walls, and its merits as an asylum for lying-in women is shown more by a low morbidity than by the actual mortality. It will be seen by the accompanying tables that in both these respects the first year contrasts unfavourably with the other two. In that year 10 women died of some form of blood-poisoning, or about 0·83 per cent., whilst amongst the 2,403 women delivered during the two subsequent years there was not a single death from this cause. I believe that this improvement is in a large measure due to the unremitting vigilance of the lady superintendent and the night superintendent.

When I was appointed to the Mastership of the hospital, in November, 1889, there had not been a death from any kind of blood-poisoning for eighteen months, and I did not, therefore, see any reason for altering the methods employed for the prevention of such diseases. I may briefly mention what these methods were, and will afterwards state how they have been modified, with the

[a] Read before the Obstetrical Section of the Royal Academy of Medicine in Ireland June 23, 1893.

reasons for such modifications. Any pupils on duty might examine patients abdominally, but only three students and one midwife vaginally. Previous to examination the external genitals were carefully asepticised by washing with soap and water, removing the soap with an irrigator, and bathing with corrosive sublimate solution, 1 in 500. The hands of the examiner were carefully scrubbed with soap and water, and a strong nail-brush then irrigated with carbolic lotion and bathed in corrosive sublimate solution. The internal genitals were douched out only in cases of purulent or fœtid discharge, in cases of pelvic deformity, and where operative interference was required. After delivery a napkin, wrung out of corrosive sublimate solution, was applied to the vulva, but was not renewed. Night and morning each patient was given a basin containing water and a large piece of tenax, and was directed to wash herself. The reason that the patients were directed to wash themselves was to avoid the possibility of the nurse carrying infection from one patient to another. There was one basin to two patients, each basin being kept on a dresser in the ward.

Table of Deliveries (including Abortions) per Month.

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Apr	May	June	July	Aug.	Sep.	Oct.	Total
1889-90 .	96	118	86	85	109	92	119	109	111	106	77	91	1,199
1890-91 .	76	94	106	86	103	110	96	109	116	117	79	92	1,184
1891-92 .	106	97	78	104	93	109	128	113	115	108	76	92	1,219

Dispensary for Outdoor Patients.

Year	Number of Single Attendances	Number of Repeated Attendances	Total
1889-90 .	3,680	5,308	8,988
1890-91 .	3,464	4,300	7,764
1891-92 .	3,521	4,053	7,574

—	1889–90	1890–91	1891–92	Total	Average
Total number of labours	1,199	1,184	1,219	3,602	
Primiparæ . .	377	343	389	1,109	1 in 3·25
Abortions . .	29	28	50	107	1 in 33·7
Hyperemesis . .	—	2	1	3	1 in 1,201
Hydramnios . .	6	6	5	17	1 in 212.
Myxoma chorii .	—	—	4	4	1 in 900.
Face to pubes . .	13	7	4	24	1 in 150
Face . . .	3	4	3	10	1 in 360:
Brow . . .	1	1	2	4	1 in 900.
Breech and lower extremities . .	41	48	29	118	1 in 30·5
Shoulder and upper extremities . .	3	1	2	6	1 in 600
Twins . .	14 {F. . 6 M. . 3 M. F. 5}	16 {F. . 6 M. . 6 M. F. 5}	16 {F. . 4 M. . 4 M. F. 8}	46 {F. 16 M. 13 M. F. 18}	1 in 78·3 {M. 1 in 225 F. 1 in 277 M.F. 1 in 200}
Triplets . .	—	—	(males)	{Breech Breech Vertex}	1 in 3,602
Prolapse of funis .	2	8	14	24	1 in 150
Placenta prævia .	6	5	6	17	1 in 212
Accidental hæmorrhage	11	13	20	44	1 in 81·9
Post-partum do. .	23	14	11	48	1 in 75
Secondary do. .	3	5	—	8	1 in 450
Prolapse of uterus .	1	1	—	2	1 in 1,801
Rupture of do. .	—	—	1	1	1 in 3,602
Do. of cervix & vagina	—	2	1	3	1 in 1,201
Lacerations of perineum	87	49	86	222	1 in 16·7
Adherent placenta .	15	10	10	35	1 in 102·9
Occlusion of vulva .	—	—	2	2	1 in 1,801
Myoma . .	1	3	1	5	1 in 720·4
Induction of premature labour . .	2	2	3	7	1 in 514·6
Version . .	8	11	6	25	1 in 194
Forceps . .	47	22	38	107	1 in 33·6
Perforation . .	2	3	2	7	1 in 514·6
Cephalotripsy . .	1	—	—	1	1 in 3,602
Cæsarean section (Porro, 1 in 1891)	—	3	—	3	1 in 1,200
Episiotomy . .	2	1	2	5	1 in 320·4
Eclampsia . .	5	6	6	17	1 in 212
Insanity {Mania .	3	—	2	5	1 in 720·4
Insanity {Melancholia	—	—	1	1	1 in 3,602
Chorea . .	1	—	—	1	1 in 3,602
Surgical emphysema .	—	2	—	2	1 in 1,801
Morbidity . .	185	117	94	396	1 in 9
Mortality . .	19	9	8	36	1 in 100
Children born alive .	1,051	1,067	1,172	3,290	1 in 1·095
Do. died in hospital	40	27	44	111	1 in 32·45
Spina bifida . .	3	—	1	4	1 in 900
Anencephalus .	—	1	3	4	1 in 900
Hydrocephalus .	—	1	—	1	1 in 3,602
Meningocele . .	—	1	1	2	1 in 1,801
Cephalhæmatoma .	2	1	—	3	1 in 1,200

——	1889–90	1890–91	1891–92
Cases	1,729	1,892	1,896
Abortion	185	208	214
Do. Threatened	10	9	17
Anencephalous fœtus	1	—	—
Accidental hæmorrhage	2	9	12
Adherent placenta	20	19	30
Breech	45	61	35
Brow	4	—	2
Cæsarean section on dead mother	—	—	1
Cleft palate	3	1	—
Curetting for abortion	2	32	28
Cyst of liver	1	—	—
Eclampsia	—	2	—
Elephantiasis of labia	—	—	1
Face	5	4	3
Footling	9	5	12
Forceps	24	20	28
Hare-lip	4	1	—
Hydramnios	10	19	6
Hydrocephalus	2	1	—
Hæmatoma vulvæ	—	—	1
Imperforate anus	1	—	—
Intra-uterine amputation of R. forearm	1	—	—
Laceration of cervix	6	1	1
Do. perineum	72	50	55
Lipoma of abdominal wall	1	—	—
Mania	—	1	—
Occipito-posterior	16	9	19
Placenta prævia	15	8	7
Porro	—	1	—
Post partum hæmorrhage	31	21	44
Do. do. Secondary	1	2	—
Prolapse of cord	11	12	5
Do. of both hands	—	1	—
Do. of both cords (twins)	—	1	—
Do. of hand and vertex	4	4	10
Do. of hand and foot	1	—	—
Do. of both hands and vertex	1	1	1
Retained membranes	8	10	16
Rupture of posterior cul de sac	—	1	—
Ruptured tubal preg.	—	—	1
Shoulder	1	—	2
Spina bifida	1	2	1
Talipes Eq. Var.	1	—	1
Do. Calcaneus	1	—	—
Transverse	5	1	2
Triplets { Male, alive, vertex; Female, dead, breech; Male, alive, breech } 1 placenta	—	—	1
Twins	25	26	22
Males	6	6	7
Females	8	5	8
Male and female	11	13	7
Vertex	9	8	4
Breech	2	2	—
Vertex and Breech	8	9	8
Version Ext.	5	1	1
Do. Int.	6	7	4
Vesicular mole	1	—	1

Table showing Cause of Deaths in the Rotunda Lying-in-Hospital from November 1, 1889, *to October* 31, 1892.

1889–1890.

Name	Admitted	Delivered	Died.	Cause of Death.
1. C. R. .	Nov. 30 .	Nov. 30 .	Dec. 1 .	Eclampsia
2. S. C. .	Dec. 8 .	Dec. 8 .	Dec. 8 .	Accidental hæmorrhage
3. M. C. .	„ 19 .	„ 19 .	„ 19 .	Accidental hæmorrhage
4. T. H. .	„ 28 .	„ 28 .	„ 28 .	Phthisis
5. T. K. .	„ 27 .	Jan. 5 .	Jan. 10 .	Septicæmia
6. J. D. .	Jan. 14 .	„ 14 .	„ 15 .	Eclampsia
7. S. H. .	April 8 .	April 13 .	April 14 .	Meningitis
8. M. B. .	April 28 .	April 30 .	May 1 .	Eclampsia
9. L. T. .	May 6 .	May 7 .	„ 23 .	Pyæmia
10. A. F. .	June 10 .	June 11 .	June 22 .	Septicæmia
11. E. C. .	„ 20 .	„ 22 .	„ 25 .	Phthisis
12. A. B. .	„ 18 .	„ 19 .	July 25 .	Septicæmia
13. S. P. .	Aug. 16 .	Aug. 23 .	Sept. 5 .	Do. and myoma
14. M. B. .	„ 15 .	„ 17 .	Aug. 29 .	Do.
15. M. L. .	„ 18 .	„ 20 .	Sept. 25 .	Pyæmia
16. E. M. .	„ 2 .	„ 2 .	Aug. 27 .	Do.
17. M. F. .	Oct. 6 .	Oct. 7 .	Oct. 12 .	Septicæmia
18. B. M. .	„ 15 .	„ 15 .	Dec. 22 .	Pyæmia
19. C. O'N.	„ 24 .	„ 29 .	Oct. 29 .	Intestinal obstruction

1890–1891.

Name	Admitted	Delivered	Died.	Cause of Death.
1. M. M'G.	Jan. 4 .	Jan. 4 .	Jan. 9 .	Phthisis
2. M. R. .	„ 10 .	„ 10 .	„ 13 .	Pneumonia
3. J. L. .	Feb. 1 .	Feb. 1 .	Feb. 1 .	Accidental hæmorrhage
4. C. M. .	March 2 .	March 2 .	March 2 .	Do.
5. E. C. .	May 5 .	May 5 .	May 6 .	Epilepsy
6. M. F. .	Aug. 4 .	Aug. 5 .	Aug. 6 .	Hyperemesis
7. M. B. .	„ 6 .	„ 6 .	„ 6 .	Hæmorrhage—Rupture of uterus
8. B. B. .	„ 5 .	„ 6 .	„ 9 .	Pneumonia
9. C. K. .	Oct. 2 .	Oct. 3 .	Oct. 3 .	Rupture of uterus

1891–1892.

Name	Admitted	Delivered	Died.	Cause of Death.
1. A. P. .	Nov. 3 .	Nov. 4 .	Nov. 4 .	Eclampsia
2. M. D. .	„ 18 .	„ 20 .	„ 29 .	Mania
3. B. C. .	April 8 .	April 9 .	April 9 .	Mitral disease. Œdema of the lungs
4. M. M. .	„ 14 .	„ 14 .	„ 15 .	Empyema
5. C. A. .	June 14 .	June 14 .	June 15 .	Eclampsia
6. A. C. .	„ 23 .	„ 24 .	„ 26 . (at home)	Double pneumonia
7. M. R. .	„ 29 .	„ 30 .	„ 30 .	Rupture of cervix and vagina—Porro
8. M. B. .	July 6 .	July 6 .	July 7 .	Pneumonia
9. M. B. .	Oct. 27 .	Oct. 27 .	Oct. 28 .	Eclampsia

Table of Morbidity, 1889–92, *showing number of cases over* 100 4°.

Temperature	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	—
100·4°, but not exceeding 102·2°	7	4	6	6	11	8	19	16	8	11	4	7	1889–90
	4	2	8	6	8	8	6	12	12	5	10	8	1890–91
	7	5	1	2	6	9	9	7	4	4	5	1	1891–92
102·2°, but not exceeding 104°	3	7	4	2	4	4	5	7	8	6	1	1	Do.
	2	3	2	2	4	4	1	1	2	3	2	2	
	3	3	1	4	–	7	5	1	2	2	1	–	
104°, but not exceeding 105·8°	–	2	1	1	3	1	5	5	–	6	–	2	Do.
	–	1	–	–	–	–	–	–	–	2	1	1	
	–	–		–	1	1			–	1	–	1	
105·8°, but not exceeding 107·6°	–	1	–	–	–	–	–	–	–	–	–	–	Do.
	–	–	–	–	–	–	–	–	–	–	–	–	
	–	–	–	–	–	–	–	–	–		–	–	

Case, November, 1892, reached 109·4°.

Table showing months of greatest Morbidity, 1889–92.

Month	1889–90	1890–91	1891–92	Total
November .	10	6	11	27
December .	14	6	8	28
January .	11	10	2	23
February .	9	8	6	23
March . .	18	12	7	37
April . .	13	12	17	42
May . .	29	7	14	50
June . .	28	13	8	49
July . .	16	14	6	36
August . .	23	10	7	40
September .	5	13	6	24
October . .	10	11	2	23

SEPTIC INFECTION.

The first death from septic infection occurred in January, 1890. (No. V.)

Case I.—T. K. came up from the country to have labour induced on account of pelvic deformity. It was found very difficult to excite uterine action. A gum elastic bougie was introduced between the membranes and the wall of the uterus, removed after 12 hours and another passed in a different direction. This was repeated several times at intervals of 12 hours, and hot douches were frequently employed. When the os was as large as a shilling, the membranes were ruptured and a Barnes' bag inserted. She was finally delivered naturally. Acute lymphatic septicæmia supervened upon the second day, and she died on the fifth.

During this month there were 10 other cases in which the temperature exceeded 100·4° F. In February there were 85 deliveries and 9 morbid cases. In March 109, with 18 morbid cases, 12 of which occurred during the first fortnight. Regarding as I do the morbidity of the patients as the true test of the efficiency of the measures taken to secure their safety, I became alarmed at this increasing number of high temperatures, feeling sure that where

there is morbidity mortality is a probable accident, resulting from the virulence of the poison and the condition of the organism into which it is introduced, circumstances over which we have very little control. I forbade vaginal examinations excepting in particular cases, when they were made by myself or one of my assistants. In April vaginal examinations were resumed; there were 13 morbid cases amongst 92 patients. In May there were 119 deliveries, 29 morbid cases, and 1 death.

CASE II.—L. T., aged twenty-three; primipara; admitted May 6, 1890, and was delivered naturally on the 7th.

Patient's temperature and pulse were perfectly normal till the evening of the 10th, three days after delivery, when they rose to 105·2° and 132. Her face was flushed, the alæ nasi working, and she complained of severe headache. The uterus was washed out, and an iodoform pessary, 30 grs., was introduced. Next day her morning temperature was 103°, with pulse 113, and in the evening 104·2° and 110. She had a rigor. Uterus was douched with plain water.

On the 12th, in the evening, the temperature was 103·4°, and pulse 118, intermittent; suffering from psychosis and diarrhœa. On the 14th the evening temperature reached 105·3°, with pulse 126. The temperature continued to be high, reaching 105·8° on the evening of the 18th, when redness was observed on both elbows and ankles, and the next day effusion was diagnosticated. She was transferred to the Auxiliary Hospital on the 21st, her evening temperature being 105°, and pulse 152—double bronchitis now being present, with respiration 46. She was receiving half an ounce of whisky every hour, but became worse, and died at 5.30 a.m. on the 23rd. (No. 9.)

I found by the bed cards that one of the pupils who had examined this case had the same day examined two other patients, both of whom became dangerously ill, though they ultimately recovered. I prohibited his attending the hospital for a month, and again stopped vaginal examinations. When they were resumed one student only was allowed to examine each case, the object being to increase the sense of individual responsibility. During June 109 women were delivered—28 had abnormal temperatures, two of whom died. (Nos. 10 and 12.)

CASE III.—A. F., age twenty; primipara; was admitted June 10, 1890, and was delivered naturally on the 11th. The evening temperature on the 13th was 102°, and pulse 120. The discharge was not fœtid, but she complained of headache. On the 14th the morning tempera-

ture was 101° and pulse 112, with tenderness over uterus and fœtid lochia. The uterus was washed out with plain water. Dry rhonchi heard over both lungs on the 15th. For the next five days the temperature remained high, between 101° and 103°, and pulse 102 to 120. She died on the eleventh day after delivery.

Case IV.—A. B., age twenty-three; primipara; was admitted June 18, 1890, and had a normal labour on the 19th. The evening of June 22 her temperature went up to 102° and her pulse to 104. Her uterus was washed out. This patient was not examined before delivery. The washing out brought her temperature down temporarily, but on the 25th it reached 103°, with a pulse of 130. The uterus was again washed out with carbolic solution, 1 in 80. Next day the temperature was rather better, 102·2°, and pulse 112. Uterus was washed out with plain water. The patient was transferred to the auxiliary on the 28th, and though her evening temperature never reached normal, yet it was never seriously high, taking the pulse into account, until the morning of July 3, fourteen days after delivery, when it touched 103°, and pulse 102. Next day a laceration of the cervix on the left side with parametritis sinistra was diagnosticated. She got gradually worse and worse, evening temperature several times being 105°, and the pulse, an especially bad feature in her case, got higher every day, reaching 168. She died July 25, thirty-seven days after delivery.

Up to this time plain water had been used for douching, but I have, since July of this year, always employed some antiseptic-creolin, iodine, carbolic acid, or corrosive sublimate. In July there were 16 morbid cases.

In August there were 23 morbid cases and 4 deaths (13, 14, 15, 16).

Case V.—S. P., age twenty-eight, delivered August 23rd, 1890; primipara. Was not examined vaginally. On the evening of the third day after labour, which was normal, the temperature rose to 100·4° with chill and headache. Next day's morning temperature was 102°, and pulse 120, with tenderness over the left broad ligament; the vagina was douched, and a compress applied over the hypogastrium. In the evening the temperature was 103°, pulse, 132; uterus was washed out with corrosive sublimate solution. This was followed by no marked benefit, as on the 27th the temperature in the evening was 103°, pulse, 126. On the 28th diarrhœa set in, the tongue was dry down the centre. Next day, 29th, there was parametritis on both sides. For four days she improved, the temperature merely reaching 101°, but pulse still quick until September 3rd, when green vomiting with diarrhœa set in, and the tem-

perature rose to 103·6°, with pulse 144. On the 4th this continued, and she died on the 5th (thirteenth day). There was a large sloughing myoma.

Case VI.—M. B., age forty; primipara; admitted August 15th. Normal labour. Child expressed by Dr. Bagot, August 17. Temperature was all right for five days. On the evening of the 22nd, it rose to 102·4°; pulse, 117; with shivering and tenderness over the left cornu of uterus. 23rd, uterus was douched out with 1 in 5,000 corrosive sublimate solution; this was followed by slight improvement, but on the 25th went to 103·2° and 104°; pulse, 112. She was again washed out with 1 in 6,000. The catheter had to be regularly passed, the quantity of urine was satisfactory. No marked improvement followed, and she died on the 29th, twelve days after delivery.

Case VII.—M. L., age eighteen; primipara; admitted August 18, 1890. Had a perfectly normal labour on the 20th. On the evening of the 23rd her temperature suddenly rose to 104·4°; pulse, 114; and she complained of shivering headache and sleeping badly; the lochia were normal apparently. The uterus was washed out with plain water, and her temperature and pulse fell next morning to 98·4° and 84; this continued till the 27th, when patient signed the declaration and went home. That evening patient had a rigor, and when seen by the extern assistant an hour after, her temperature was 106·2°, and her pulse 180. She was treated at her own home for four days and then sent in to the Auxiliary, having had rigors on the 31st and September 1st.

Her further history was—high temperature up to 105°, and pulse 150, with rigors on the 13th, 14th, 15th, and 24th; diarrhœa set in on the 18th, and cough, with consequent insomnia; on the 24th at 9 p.m. her temperature rose to 105·6°, and she died at 3.30 p.m. on the 25th, five weeks after delivery.

Case VIII.—E. M., age twenty-eight; second pregnancy; admitted August 2, 1890. Was not examined by anybody, neither was the vulva touched during delivery. On the morning of the 5th, three days after delivery, the temperature was 99°; pulse, 100; and in the evening, 102°; pulse, 118; the lochia normal, breasts greatly distended and tense. Uterus was washed out with plain water. Next day, fourth after delivery, the evening temperature reached 105°, and pulse 120. The uterus was washed out, and was followed by a profuse red discharge. Tinct. iodi. was injected by Braun's syringe, and the uterus, which was very badly contracted, was plugged with iodoform gauze; this was removed twenty-four hours later, and the same treatment again employed; temperature, 104°; pulse, 126. On the 8th the morning temperature was 103°, the

evening 102°; the pulse being 132 and 120 respectively; the plug was not renewed, but uterus was douched with plain water. From this on the temperature at night varied between 100° and 103°, the pulse likewise seldom under 120 and often up to 140. Died on the 27th, twenty-five days after labour.

After the middle of this month I again stopped vaginal examinations, but without apparent benefit, as three of the fatal cases had never been examined. In all these cases infection was late, and they were of the phlebothrombotic type. It appeared, therefore, probable that the infection was due to some error in the management subsequent to rather than during labour. Each patient was now provided with a separate basin, which was kept over her bed, and carefully scrubbed and disinfected with corrosive sublimate both before and after using it. I also directed that they should be washed by the pupil midwives, both because this is an important part of a nurse's education, and also because an ignorant woman, lying in bed, could not thoroughly cleanse her own hands, and there was, therefore, considerable risk of her infecting herself,

In September there were only five cases in which the temperature exceeded 100·4° F. In October there were ten morbid cases, two of which died. (No. 17 and 18.)

Case IX.—M. F., age twenty-seven; first pregnancy; admitted October 6, 1890. Delivered by forceps, October 7. Temperature and pulse rose thirty-six hours later, and she ran the usual course. Perinæum and part of left labium sloughed on the 10th. Iodoform pessary introduced into vagina. October 12th, tubular breathing. Died at 11 p.m.

Case X.—B. M., age twenty-eight; admitted October 15, 1890; primipara. Was not examined and was normally delivered the same day. On the evening of the next day, 16th, twenty-four and a half hours after labour, her temperature was 101·4°, with pulse 102, but no complaint. Next morning temperature was 99·8°, and pulse 112, and headache; the vagina was douched, as discharge was fœtid. The evening temperature was 102·6°; pulse, 120; so uterus was washed out with plain water. On the 18th this was repeated, as temperature continued high, and a piece of decomposing membranes was washed out; carbolised water being employed. For the next three days little improvement showed itself and on the 21st diarrhœa set in and lasted until the 26th, but without reducing the temperature; the pulse also was 128 to 132, and got higher, going to 156. Patient was now (27th) transferred to the Auxiliary, and, after a long struggle, died two months and a week after her delivery (Dec. 22).

PROLAPSE OF FUNIS.

During the years 1889–1892 there were 21 cases, with 25 children, 8 of whom died.

Name	Treatment	Result to Child	Presentation	Remarks
1. M. W. .	1st. Foot brought down and child extracted. 2nd. Podalic version and extraction	1st dead. 2nd alive	B. & V.	Twins; 1st breech cord prolapsed two feet; no pulsation; post partum hæmorrhage.
2. H. C. .	Replaced in genu-pectoral position	Alive .	V.	Forceps
3. B. B. .	Left to nature .	Macerated .	Footling	Premature; 7½ months; fœtus macerated
4. K. B. .	Bi-polar version .	Dead .	V.	—
5. M. K., Aug. 5	Extraction by foot	Alive .	Footling	--
6. L. D., Sept 4	Forceps . .	Dead .	V.	—
7. J. L. .	Do. . .	Alive .	V.	—
8. M. D. .	Left to nature .	Macerated .	V.	Premature; bones of skull freely movable
9. E. O'R. .	Do. . .	Dead .	Footling	Premature; 6 months; accidental hæmorrhage
10. A. N. .	Do. . .	Do. .	V. & hand	—
11. M. L. .	Do. . .	1st alive. 2nd dead	V. B.	Twins; vertex breech
12. N. W. .	Extraction .	1st alive. 2nd alive	F. F.	Twins; both footling; lived but a short time
13. M. H. .	Reposition by hand	Dead .	Arm	Prolapse of arm and funis
14. M. A. D. .	Left to nature .	Do. .	V.	No pulsation on admission
15. A. M. .	Do. . .	Do. .	V.	Premature; 6½ months
16. M. A. N. .	Reposition by hand	Alive .	V.	—
17. A. L. .	Do. . .	1st alive. 2nd alive	V. B.	Twins
18. L. V. .	Left to nature .	Alive .	B.	Atresia hymenalis present, and broken down
19. M. C. .	Do. . .	Do. .	B.	—
20. J. L. .	Forceps . .	Do. .	V.	—
21. M. R. .	Do. . .	Do. .	V.	—

PLACENTA PRÆVIA.

There were seventeen cases of placenta prævia. Eleven children were dead, and one mother was lost through rupture of the uterus. The following are the most interesting cases:—

Case I.—C. M., age thirty-five; seventh pregnancy; was admitted to the Rotunda on August 12, 1891, with considerable hæmorrhage. On palpation the first vertex position with the head not fixed was diagnosticated. This was confirmed by vaginal examination, and at the same time a marginal placenta prævia felt. External version was performed, and a foot brought down. Hæmorrhage continuing, and the os being fairly dilated, the child was extracted. This was a female alive, and weighed six and a half pounds. The patient went on well, and was discharged Aug. 21.

Case II.—M. F., age twenty-seven; second pregnancy; was admitted to the hospital August 6, 1891, with hæmorrhage. Marginal placenta prævia was diagnosticated, and an attempt at internal version made and abandoned in favour of the forceps, as the lower uterine segment was greatly thinned out. The extraction proved comparatively easy, and the child, a male, weighing eight pounds, was delivered occipito-posterior. The placenta was strongly adherent, and was removed with the utmost difficulty. Owing to the great flaccidity and softness of the uterus a rupture through the upper portion of Douglas's pouch occurred, and the patient died on the couch.

Case III.—M. W., age thirty-four; ninth pregnancy; was sent in January 19, 1890, from the extern maternity, suffering from ante-partum hæmorrhage. The membranes had been ruptured before admission. On examination the placenta was palpated low down in front; the os admitted two fingers; the head and a foot were presenting; and a marginal placenta prævia was felt. Combined version was performed, a foot brought down, and the case left to nature. The child was dead. Patient was discharged January 29.

Case IV.—R. M., age thirty-four; sixth pregnancy; was admitted December 3, 1889, with hæmorrhage, which began at 8 15 a.m. Placenta prævia was diagnosticated, and the membranes were ruptured at 10 p.m., and all bleeding ceased for seven hours, but returned at 5 a.m., Dec. 4. Hot-water douching controlled it, and patient was delivered December 5, at 5 50 p.m., of a premature child. The placenta was adherent, and was removed by hand. Post-partum hæmorrhage came on, but was stopped by hot-water douching. Patient went home December 18.

Case V.—S. V., age 30; seventh pregnancy; was admitted into the Rotunda for hæmorrhage, December 4, 1889. Palpation indicated a

breech, which was confirmed by vaginal touch. The os was the size of a shilling, and placenta was felt. At two next morning considerable hæmorrhage came on, and the membranes were ruptured and stopped it. The patient went on for three days without further advance or bleeding till the 8th, when a foot was brought down, and she delivered herself of a dead male infant, weighing four and a half pounds. The placenta was firmly adherent, and was manually separated. Patient left in good health December 17.

CASE VI.—M. J., age twenty-seven; third pregnancy; was admitted into hospital from the extern maternity, November 22, 1889, having been plugged by the clinical clerk for ante-partum hæmorrhage. On admission the placenta was palpated low down; the os was one-third dilated, and a partial placenta prævia could be felt; the head was high up, freely movable, and in the second position. Fœtal heart was slow, with a well-marked limit. The membranes were ruptured, and a hot-water douche given; the placenta lay posteriorly and to the left. Ergot was administered at twelve midday; at four p.m. hæmorrhage returned, the os was half dilated, and the head still freely movable; the fœtal heart could no longer be heard; forceps were used, and the child easily delivered, but was dead. Patient discharged the eighth day.

CASE VII.—M. R., age thirty-eight; thirteenth pregnancy; admitted for placenta prævia, December 29, 1891. On examination hydramnios was likewise diagnosticated, and she delivered herself of an anencephalous dead fœtus. Went home January 6, 1892.

CASE VIII.—J. M., age thirty-two; fifth pregnancy; admitted to the Rotunda Hospital, April 21, 1892, for hæmorrhage. Placenta prævia partialis was diagnosticated, and hæmorrhage continuing a foot was brought down. Pains now completely ceased, and for seventeen hours none came on, and patient then delivered herself of a seven months dead fœtus. Went home January 27.

1889–1890.

Name	Variety	Result to Child	Presentation	Result to Mother	Remarks
M. J.	Partial	Dead -	V. 2	R.	Forceps
S. V.	Do.	Do. -	V. 1	R.	Version
R. M.	Do.	Alive -	V. 1	R.	Adherent placenta
E. K.	Do.	Do. -	B.	R.	Version
M. W.	Marginal	Dead -	V. and foot	R.	Do.
M. F.	Partial	Do. -	V. 1	R.	Do.

1890–1891.

Name	Variety	Result to Child	Presentation	Result to Mother	Remarks
A. B.	Lateral	Dead -	V. 1	R.	Version
E. P.	Partial	Do. -	Hand	R.	Do.
M. F.	Marginal	Alive -	V. 1	D.	Forceps; rupture of uterus
E. R.	Partial	Dead -	V. 1	R.	Version
C. M.	Marginal	Alive -	V. 1	R.	Do.
1891–1892.					
M. R.	Partial	Dead -	V. 1	R.	—
M. H.	Marginal	Do. -	Arm	R.	—
J. M.	Partial	Do. -	V. 1	R.	Version
M. D.	Marginal	Alive -	V. 1	R.	—
H. R.	Partial	Dead -	V. 1	R.	Version
E. R.	Do.	Alive -	B. V.	R.	Twins

ACCIDENTAL HÆMORRHAGE.

There were forty-four cases of accidental hæmorrhage, most of them of little consequence, but some very dangerous and five fatal.

The accouchement forcé did not yield satisfactory results. These patients appeared to suffer from an extreme degree of shock, and the rapid emptying of the uterus in those cases in which it was employed seemed to determine the fatal issue. The treatment of such cases has never been satisfactorily formulated, but the general line of treatment which we now adopt is as follows:—When labour pains are absent, wash out the vagina with hot antiseptic solution, 110° F., plug the vagina and apply a binder. When labour pains set in rupture the membranes and bring down a foot, or, where practicable, deliver by forceps or perforator. There are cases, however, which do not admit of any delay, and yet the os is not sufficiently dilated to deliver immediately per vias naturales; in such cases Porro's operation is the only method which holds out a hope of saving the mother's life.

A case of this kind occurred in the extern maternity during my absence in 1891. Dr. Bagot, my senior assistant, performed this operation at the patient's home with a satisfactory result.

Case I.—S. C., admitted in a very collapsed condition from excessive loss of blood, the os being fairly dilated and the head presenting, the latter was perforated and the child extracted. The patient died on the couch.

Case II.—M. G., age thirty-two, 5-para, was admitted December 19, 1889, in a collapsed condition, her pulse could no longer be felt, and she was completely blanched. On examination the os was found to be half dilated. Podalic version was performed and the child extracted. Immediately severe post-partum hæmorrhage followed; the uterus was injected with liq. ferri. perchlor., part 1 in 4, and the usual restoratives employed, however, without avail, as she died three and a half hours after delivery; the child was a male, dead, weighing eight pounds.

Case III.—N. S., age thirty-five, 6-para, was admitted with severe hæmorrhage, July 21, 1890. Membranes were ruptured and a foot brought down, this acting as a plug the case was left to nature, and she delivered herself of a dead male fœtus.

Case IV.—A. D., age thirty, 7-para, was admitted into hospital, May 28, 1890, with severe hæmorrhage. Membranes were ruptured, but the hæmorrhage continuing, bi-polar version was performed, and a foot was brought down. This acting as a plug controlled the bleeding, and the patient later on delivered herself of a dead female, weighing 6½ lbs. Patient went out well.

Case V.—K. M., age thirty-four, 8-para, admitted March 2, 1891, with hæmorrhage; breech presentation. Membranes ruptured, and leg brought down. Child was delivered by traction, and severe post-partum hæmorrhage followed, which was treated by hot water injections and swabbing out the uterus with liq. ferri. perchlor. The patient died three hours after delivery. The child was a male, dead, weighing four pounds.

Case VI.—J. L., age thirty, 7-para, was admitted to the Lying-in Hospital, February 1, 1891, at 10 30 a.m. On palpation the uterus was found to be very tense; patient was very pale, with a small pulse of 120. The vaginal examination showed a first vertex position with an os the size of half-a-crown and very dilatable. Internal version was performed at 2 45 p.m., and immediate extraction of a dead male infant; the placenta was found completely separated; auto-transfusion employed, after which the patient rallied for a little; morphia in one-third grain dose was administered owing to her great restlessness, and repeated two hours

later. At 8.15 transfusion, according to the method of Münchmeir, was performed, but without success, as she died at 9.30 p.m.

Case VII.—M. B., age twenty-five, 3-para, admitted November 18, 1891, with symptoms of concealed accidental hæmorrhage. On pushing up the head this was followed by a gush of hæmorrhage. Internal version was performed, and child extracted, male, dead, weighing 7¾ lbs. Rupture of posterior vaginal wall high up was now diagnosticated, and plugged with iodoform gauze; this was removed thirty-six hours after, and no bleeding followed. On the 27th the patient was deeply jaundiced, and her urine was examined for uro-bilin, but with a negative result. This disappeared in two days, and from this on she made an uninterrupted recovery; her highest temperature was 99·8°.

Case VIII.—M. D., age thirty-six, 10-para, was admitted December 9, 1891, with accidental hæmorrhage. Internal version was performed, and a foot brought down; hæmorrhage continuing slow extraction was employed, and the child delivered, Schultzed for an hour and resuscitated. The patient went home on the eighth day.

Case IX.—E. M'D., age thirty-eight, 12-para. Very anæmic, the membranes intact, and the os the size of a shilling. A hot douche was given, and the vagina plugged with iodoform gauze; a firm binder being also applied; strong pains set in almost immediately, and the child, which was a male, dead, was expelled by natural efforts; the placenta following in the same pain.

PORRO'S OPERATION.

In this case my assistant, Dr. Bagot, was called to a patient in the extern maternity. In a tenement house, not far from the hospital, he found a poor woman almost collapsed from severe accidental hæmorrhage, which had been at first concealed. The pulse was 148, very small and compressible; her lips were quite blanched, and her pupils dilated. There was jactitation and sighing respiration. The uterus was larger than the term of pregnancy, though the membranes had been ruptured before his arrival, in order to check the bleeding. The child presented in the first position, vertex; no fœtal heart could be heard. The os, which was rigid and undilatable, admitted one finger only. On pushing up the head the blood flowed freely out of the uterus. Labour had not set in, though she had all night suffered from severe distension and pains in the uterus. Believing that, owing to her collapsed state, it would be impossible to deliver her alive by perforation, followed either by version or extraction with the

cranioclast, he at once performed Porro's operation, treating the pedicle extra peritoneally by means of a *serre-noeud*, and pedicle pins made out of two Peaslee's perineum needles, as he had no time to procure proper pins. The placenta was found at the operation to be completely detached, and the uterus was full of clots; the child of course was dead. She was removed to the Rotunda Hospital on the fourth day after the operation, and made an excellent recovery. Great credit is due to Dr. Bagot for his pluck and promptness in performing an operation under such disadvantageous circumstances.

POST-PARTUM HÆMORRHAGE.

There were forty-eight cases of post partum hæmorrhage, very few being of a dangerous amount. Perchloride of iron was used in four cases only, and all were in the first year. Since then we have found plugging the uterus with iodoform gauze an efficient substitute. Five patients died, but they were all cases which had been rapidly delivered on account of severe ante-partum hæmorrhage, and have been fully detailed amongst the cases of accidental and unavoidable hæmorrhage.

Transfusion of salt and water was employed in two cases, once hypodermically by Münchmeir's method, and once intra-venous by means of Collins' apparatus, but in both cases with only temporary benefit.

RUPTURE OF UTERUS AND CERVIX.

Excluding cases of vertical tears of the cervix, there were three cases of extensive laceration of the vaginal vault, and one of the lower segment of the uterus. Two of these cases have already been detailed under accidental hæmorrhage.

Rupture of Vaginal Vault—Porro's Operation.

M. R., aged thirty-five, 8-para, June 28th, came into the Lying-in Hospital with rupture of the uterus, extending into the posterior fornix of the vagina. The fœtus had entirely escaped from the uterus, which on abdominal palpation could be felt firmly contracted in the left iliac fossa. At first I mistook it for the fœtal head, but this was subsequently discovered in the vagina. The child having been extracted with forceps, a quantity of blood and clots came away. Following up the funis, my hand passed through the rent, which was, of course, at least as large as the circumference of the fœtal body which had passed through it; having

removed the placenta from amongst the intestines, and washed out the abdomen with hot water, hæmorrhage continuing to an alarming extent, I opened the abdomen, and, the control of the bleeding by the most rapid method being a vital necessity, I applied an elastic ligature around the cervix, and removed the uterus. Having secured all the other vessels not included in the ligature, I sewed up the rent in the posterior fornix as well as I could, washed out the abdomen, and drained per vaginam. The patient collapsed.

FORCEPS.

There were forty-seven forceps cases during 1889–90.

Thirty-three	Primiparæ.
One	Secundipara.
Four	3-paræ.
Four	4-paræ.
Two	6-paræ.
Two	8-paræ.
One	9-para.

No.		Indications
Thirty-three	for	Delay, *i.e.*, over five hours in the second stage.
Three	„	Rise in fœtal heart.
Two	„	Rise of temperature.
Two	„	Face presentation.
One	„	Placenta prævia.
One	„	Eclampsia.
One	„	Phthisis } dying.
One	„	Pneumonia } dying.
One	„	Large myoma obstructing delivery.
One	„	Prolapse of cord.
One	„	After coming head.

The forceps was applied to the breech once. One case required subsequent craniotomy.

There were thirty-three primiparæ.

Ages of Primiparæ.

Fourteen	between	17	and	25	years of age.
Twelve	„	25	„	30	„
Three	„	30	„	35	„
Four	„	35	„	44	„

There were thirteen children dead.

There were twenty-two forceps cases during 1890–91.

Eleven	...	...	...	Primiparæ.
Four	...	...	...	Secundiparæ.
One	...	...	...	5-para.
One	...	...	...	6-para.
Two	...	...	...	7-paræ.
One	...	...	...	8-para.
Two	...	...	...	12-paræ.

No.	Indications	Result to child	
		Alive	Dead
3	On account of fœtal heart	3	–
12	" delay	9	3
1	" eclampsia	1	–
2	" accidental hæmorrhage ...	2	–
1	" ascites of fœtus obstructing delivery	–	1
1	" placenta prævia ...	–	1
1	" prolapse of cord ...	–	1
1	On after-coming head	–	1
22		15	7

There was one occipito-posterior.

Ages of Primiparæ.

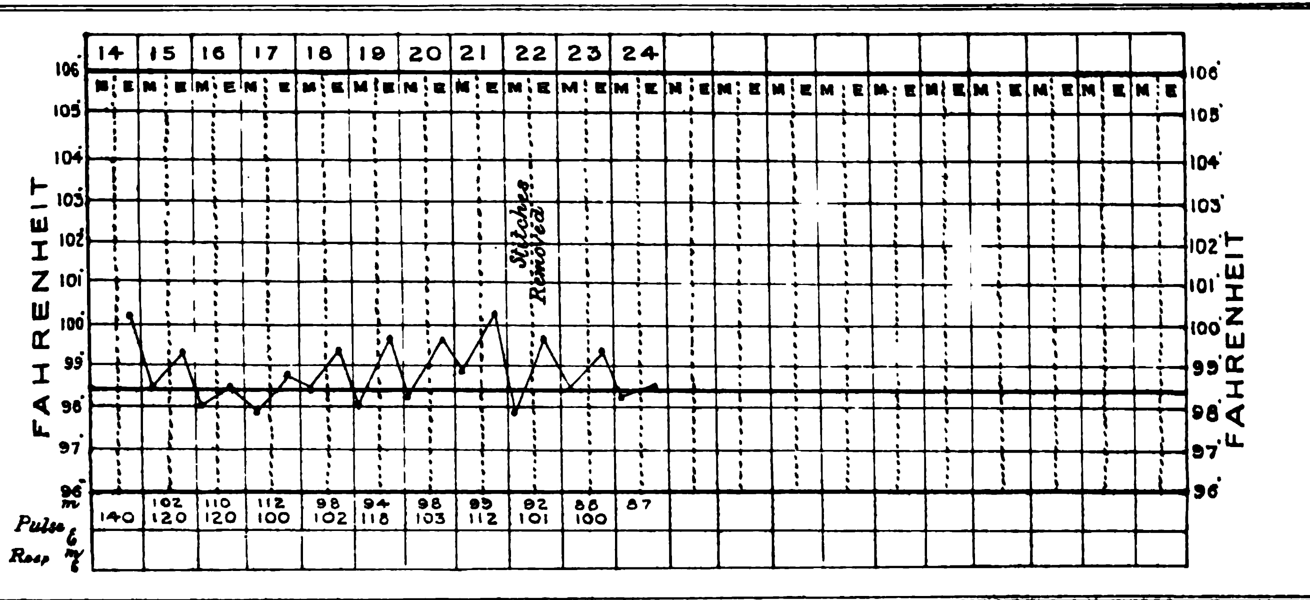
Five between 19 and 25 years of age.
Four " 25 " 30 "
Two " 30 " 36 "

In the year 1891–92 there were thirty-eight forceps cases.

Twenty-eight		...	...	Primiparæ.
Four	...	...	...	Secundiparæ.
Three	...	...	...	3-paræ.
Three	...	...	...	4-paræ.

No.	Indications	Result to child	
		Alive	Dead
35	Second stage over four hours	27	8
2	Prolapse of cord ...	2	–
1	Eclampsia	–	1
38		29	9

F.H. Age. 29. Cæsarean Section June 14. 1891



Recovery

There were six occipito-posterior. Two required subsequent craniotomy.

Ages of Primiparæ.

Seventeen	between	18	and	25	years of age.
Eight	„	25	„	30	„
Three	„	30	„	35	„

PERFORATION.

Five children were perforated:—

Once in accidental hæmorrhage.

Once in brow presentation.

Once in after-coming head.

Once in contracted pelvis.

Once in rupture of uterus.

All the children were believed to be dead.

CÆSAREAN SECTION.

Cæsarean section was necessary in three cases of extreme pelvic deformity—one had a kyphotic, one a rickety flat pelvis, and one a generally contracted flat pelvis. In the first the elastic ligature could not be applied, owing to the head having entered the pelvis. In the second it was applied, but was not lightened until after the extraction of the child, but in the third it was firmly applied, and this child was lost—I believe, in consequence; the other two children survived, and all the mothers.

Case I.—Mrs. H. was brought to me by Dr. Alfred Smith in the third month of her second pregnancy; her first child had been delivered after perforation in the hospital.

Her height was 4 feet 7 inches, and there was a well-marked kyphosis in the lower lumbar and upper sacral regions. The distance between the anterior superior spines of the ilia was 25 cm. and the most distant points of the crests 28 cm. The symphysis pubis protruded in a beak. The sacral promontory could not be reached, but the pelvic outlet was narrowed in all its diameters, especially the transverse, the distance between the tuberosities of the ischia being only 5 cm., or exactly two inches. The woman was most anxious to have a living child, and after consultation with Dr. Smith and Dr. Bagot, we determined to advise Cæsarean section at term, to which she readily assented. She came into the hospital on Sunday morning, June 14th, 1891, and was then in labour. The operation was performed at noon, the os being almost fully dilated, but the membranes intact. She made an excellent recovery and nursed her infant, both leaving the hospital in excellent health and spirits.

Case II.—C. F., aged twenty-six. Was markedly rachitic, with bow legs, &c. The true conjugate measured 7 cm., or 2¾ inches. The abdomen was pendulous, and though the patient had been two days in labour, the waters had long escaped, and prolonged efforts to deliver with the forceps had been made, still the head was freely movable above the brim. I determined to perform Cæsarean section without further delay. The operation was successfully performed, and a living child extracted; but convalescence was protracted by the formation of an abscess which burst through the lower angle of the wound, and discharged about half a pint of pus. The tissues over the child's forehead and neck, which had been crushed by the forceps, sloughed, and an abscess formed in the latter situation; but, ultimately, both mother and child left the hospital in good health.

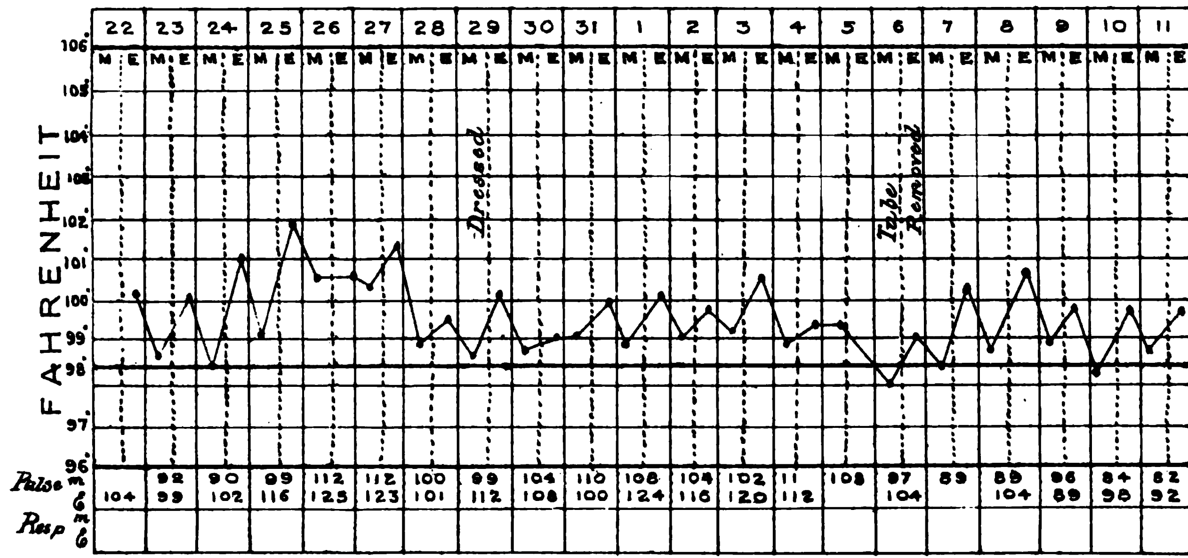
Case III.—J. S., October 25, aged twenty-five. First pregnancy. No sign of rickets. On palpation the head was found freely movable above the brim. On measuring the pelvis the conjugate of the brim was found to be 7 cms.=2¾ inches, and the transverse 10½ cms.=4¼ inches. Cæsarean section was performed on Sunday, December 13. The elastic ligature was applied and tightened before the uterus was opened, and, though scarcely a minute elapsed before the child was extracted, it was so deeply asphyxiated that it could not be resuscitated. The mother made an excellent convalescence.

ECLAMPSIA.

Name.	Result to Child.	Result to Mother.	Remarks.
A. W., 5 ...	D. ...	R. ...	
A. P., 12 ...	D. ...	D. 1 ...	
M. B., 1 ...	A. ...	D. 2 ...	
C. A., 1 ...	D. ...	D. 3 ...	
E. M., 1 ...	D. ...	R. ...	
C. C., 1 ...	A. ...	R. ...	
M. B., 1 ...	A. ...	D. 4 ...	
J. D., 1 ...	D. ...	D. 5 ...	
T. C., 1 ...	D. ...	R. ...	
N. M., 1 ...	D. ...	R. ...	
F. R., 6 ...	D. ...	R. ...	
M. M., 2 ...	A. ...	R. ...	
M. D., 6 ...	D. ...	R. ...	
M. M., 1 ...	A. ...	R. ...	
M. M., 1 ...	A. ...	R. ...	
M. J., 1 ...	D. ...	R. ...	
C. R., 2 ...	D. ...	D. 6 ...	

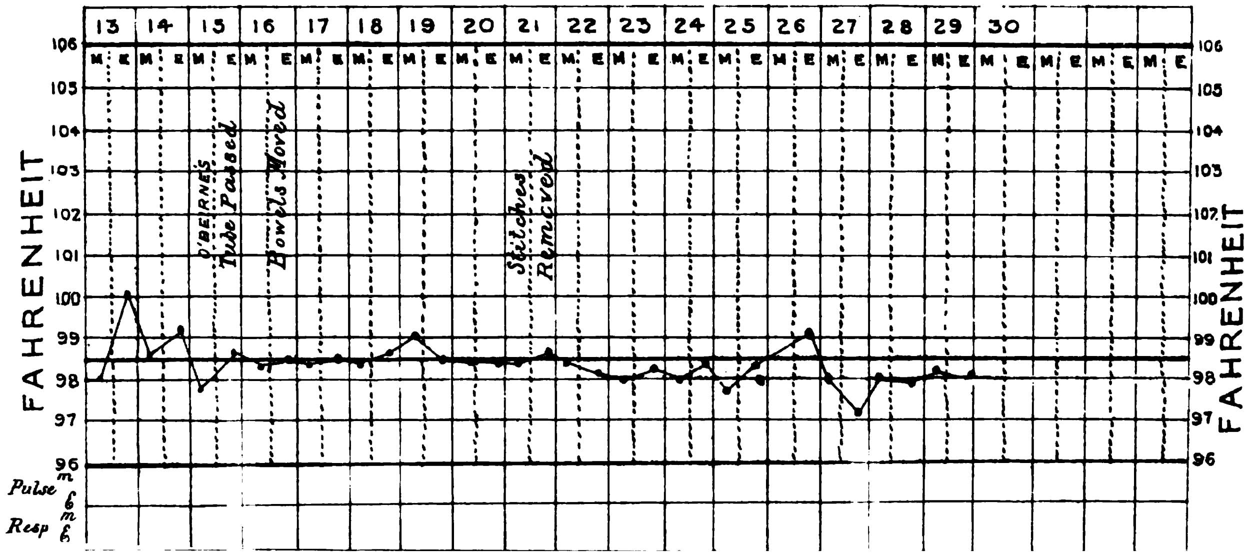
There were seventeen cases. Six living children. Six mothers were lost.

C.F. AGE. 26. CÆSAREAN SECTION. AUG. 22. 1891



RECOVERY

J.S. AGE 25. CÆSAREAN SECTION. DEC. 13. 1891.



Case I.—M. J., age twenty-one; first pregnancy, April 8th, 1890. Post partum. Male, dead, 5lbs. Five fits—the first 14¾ hours after labour. Urine, ½ albumen. Hyd. chloral, per rectum, grs. 40. Pot. cit., grs. 15, every two hours. Vapour bath. Chloroform during fits. Pulv. jalapae co., grs. 30; no effect. Hyd. chloral, per rectum, grs. 30. Hyoscine, $\frac{1}{75}$ gr., hypodermically. April 9th.—Last fit, 8 55 p.m. Hydrarg. sub. chl., grs. 5. Discharged 16th.

Case II.—M. M., age twenty-four; primipara; November 25th, 1890; hours ill, 13. Male, alive, 7lbs, December 5th. Discharged 14th.

Case III.—M. M., age twenty-one; first pregnancy, January 13th, 1891; hours ill, 14. Sent in from extern maternity. 11 30 p.m.—Had an eclamptic convulsion; never had fits before. First vertex position. Chloral hyd., grs. 45, by mouth; chloroform; F. H. good, 130; head low down; forceps; lacerated perinæum; urine, sp. gr., 1017, highly albuminous. Temperature 100, pulse 106. Female, alive, 6lbs.

Case IV.—M. D., age thirty-seven; sixth pregnancy; April 7th, 1891. Eight months pregnant. Complaining of headache for three days; three fits before admission, ten after. Female, dead, 8½lbs. Chloroform, morphin hypodermically, purgative enema, chloral hydrate, enemata, vapour bath. Pulv. jalapae co., hydrar. sub. chl., pot. cit., milk and barley water. Discharged 19th.

Case V.—M. M. L., age twenty-seven; preg. 2; June 8th, 1891. Confined at home. Three fits before admission, one after. Male, alive. Discharged, 16th.

Case VI.—F. R., age forty; preg. 6. July 14th, 1891. Sent in unconscious, states she had several fits at home. No fit after admission. Male, dead, 5 lbs. Discharged, 29th.

Case VII.—N. M., age twenty-one; preg. 1, six months, male, dead 2½ lbs. September 21, 1891.—Seven fits—vapour bath, hyoscine, calomel 22nd.—Conscious. 23rd.—Labour came on at 12 50 p.m. 24th.—1 a.m. delivered. Discharged, October 3rd.

Case VIII.—T. C., age thirty; preg. 1; January 15th, 1890. Hours ill, 5½. 7.30 p.m.—Premature breech. Dead, fresh. Urine highly albuminous. Removed to Auxiliary, January 24. Recovery.

Case IX.—E. M., aged twenty-eight; primipara. Three fits. Seven months' foetus—dead. Discharged, January 19th, 1892.

Case X.—C. C., age seventeen; primipara. December 25th, 1891. Fourteen fits. Developed eclampsia eight hours after delivery of a male, 6¾lb. infant—jalap, ʒi; hydrarg subchl. grs. v. Chlorof. Discharged, December 26th.

CASE XI.—A. W., age twenty-seven; fifth pregnancy; admitted November 28, 1892, suffering from eclamptic fits. Number of fits, three. Vapour bath. Pulv. jal. co., ʒj; calomel, grs. v. Urine highly albuminous. Fits ceased after bowels had moved. Nov. 29.—Eight months' fœtus born dead. Patient recovered. No high temperature.

CASE XII.—C. R., age twenty-two; preg. 2; November 30th, 1889. Male, 6½lbs. Dead. 12 noon.—Fit on admission. Semi-conscious. Os patulous, admitted two fingers. Vertex. F. H. good. Urine scanty, half albumen. Chloroform. Enema—chloral hydate, 45 grs. 2 p.m.—Hot douche. Os ¼ dilated. F. H. good. Membranes ruptured. Urine ℥iii, albumen. Nineteen fits. 6 25 p.m.—Child born. Fit when passing vulva, and another on placenta being expelled. December 1—Morphia, ⅓ gr. 8 45 a.m.—Enema chloral, grs. xxx. 9 15 a.m.—Croton oil, one drop. 6 15 p.m.—Patient died.

CASE XIII.—J. D., age twenty-five; first pregnancy; was sent in to the hospital from the extern maternity, January 14th, 1890. Patient had had three convulsions before admission; the uterus was the size of an eight months' pregnancy. No fœtal heart could be heard. Patient had seven fits after admission. The os having reached the size of a 5s. piece, craniotomy was performed at 11 45 p.m. Urine was almost solid on heating. ℥iij. Patient died next day.

CASE XIV.—M. B., aged twenty-one; first pregnancy; was admitted to hospital April 28, 1890, suffering from eclampsia. Forceps were used, and the child, a female, weighing 7½ lbs., was delivered April 30th alive, but the mother succumbed May 1st.

CASE XV.—A. P., aged thirty-three; twelfth pregnancy; was admitted from the extern maternity suffering from eclampsia on November 3, 1891. Patient was an immensely stout woman. Vapour baths were employed, during one of which she delivered herself of a dead born child, which was abselutely blanched. Nov. 4—Patient died from cardiac failure and œdema of the lungs. Her temperature after death was 108°.

CASE XVI.—C. A., aged 21; primipara; admitted June 14, 1892, suffering from eclampsia; was delivered June 14 at 10 50 p.m. Forceps were employed, but the child was dead. She had thirty-nine fits. Oxygen was tried without avail, as she died 15th at 9 42 a.m.

CASE XVII.—M. B., aged nineteen; primipara; October 27, 1892. Three fits before admission. Chloroform. Chloral, per stomach tube. Hot baths. Eighteen fits. Forceps. Os size of five-shilling piece. Child alive. Developed œdema of lungs, and died of heart failure, October 28.

CASES OF DEATHS FROM NON-PUERPERAL CAUSES.

Phthisis.

Case I.—T. H., age twenty-five, first pregnancy, was admitted to the labour ward on the 25th of December, 1889, in the last stage of phthisis. The os was the size of a five-shilling piece, and forceps was applied to save the child, as the mother was dying. The infant was a male, alive, and weighed 4½lbs. Patient died during delivery.

Case II.—M. J. M'G., age twenty-four, admitted January 4th, 1891, fifth pregnancy. Delivered January 4th. Was suffering from advanced phthisis, both lungs involved. Her labour was normal, with the exception of the placenta, which was adherent, and was removed. The child was a male, alive, weighing 6 lbs. She died five days later.

Meningitis.

Case.—S. N., aged thirty-three, third pregnancy, admitted April 8th, 1890, to await her confinement on the 13th. She developed symptoms of influenza, which was epidemic at the time. Temperature rose rapidly, and she became maniacal. Labour set in prematurely, and was completed rapidly by natural efforts; patient died 6 hours after. Autopsy revealed ozœna of left nostril, and purulent meningitis. Pelvic organs healthy.

Acute Tuberculosis.

Case.—E. C., age twenty-seven, first pregnancy, was (June 20) admitted June 20, 1890, in a very bad state of health with her first pregnancy. She was delivered of a male infant, weighing 7½lbs., on June 22nd. Forceps were used; head on perinæum over the time. She died the 25th. Autopsy by Dr. Earl:—Acute Tuberculosis.

Intestinal Obstruction.

Case.—K. O'N., aged twenty-nine, third pregnancy, admitted October 24th, 1890. Had been ill for three weeks before admission. Greatly reduced by constant vomiting. Complained of pain in right side and absolute constipation. Seen by Dr. James Little. Advised against operative interference. Delivered prematurely, October 29th. Child lived thirty minutes; patient died same day.

Hyperemesis.

Case.—M. F., age twenty-four, first pregnancy. Was admitted to hospital, August 4, 1891, in a collapsed state; temperature sub-normal, and rapid pulse. Her history showed she had been vomiting over a month, was six months pregnant, and the resources of the pharmacopœia had been exhausted upon her without avail by her doctors outside. Died August 6th.

Epilepsy.

CASE.—E. C., age twenty-eight, third pregnancy. Admitted to Rotunda, May 5th, 1891. Had been epileptic for years, and was admitted in status epilepticus. Delivered May 5th. Died May 6th.

Pneumonia.

CASE I.—M. R., admitted January 10th, 1891, with croupous pneumonia. Died January 13th.

CASE II.—B. B., age twenty-five; primipara. Was admitted August 5th, 1891. Sent in from the dispensary, where she had come complaining of great pain in the region of her left lung. Delivered August 6th; had a temperature of 102·2°, pulse 150. Both remained high till her death, August 9th.

CASE III.—M. B., age thirty-seven, second pregnancy. Admitted with broncho-pneumonia complicating labour, July 6th, 1892. Died next day.

CASE IV.—A. C., age thirty-eight, tenth pregnancy, weighed 18 stone. Admitted June 23rd, with double croupous pneumonia; temperature 101·6°; pulse, 158; orthopnœa; cyanotic. Delivered shortly after admission; insisted on leaving hospital two hours after delivery, and died at her own home.

Mania.

CASE.—M. D., age twenty. Primipara. Admitted November 18, 1891. Inupta; fretting greatly. Delivered by forceps November 20, on account of delay; perinæum lacerated. On the 21st patient took her napkin and binder off, and got out of bed; she was then isolated and specially watched. On the 22nd the stitches were removed, union was good. On the 27th she developed well-marked mania, and became very violent. Hyoscine and pot. brom. were administered. On the 29th she developed a rigor, and her temperature, which up to this had never exceeded 100·6°, rose to 109·4°. Respiration, 50, and pulse could not be counted, 6 30 a.m. Died at 7 a.m. Post mortem by Dr. Earl:—Organs all healthy. No meningitis. No cause of death could be made out.

Mitral Disease. Pulmonary Œdema.

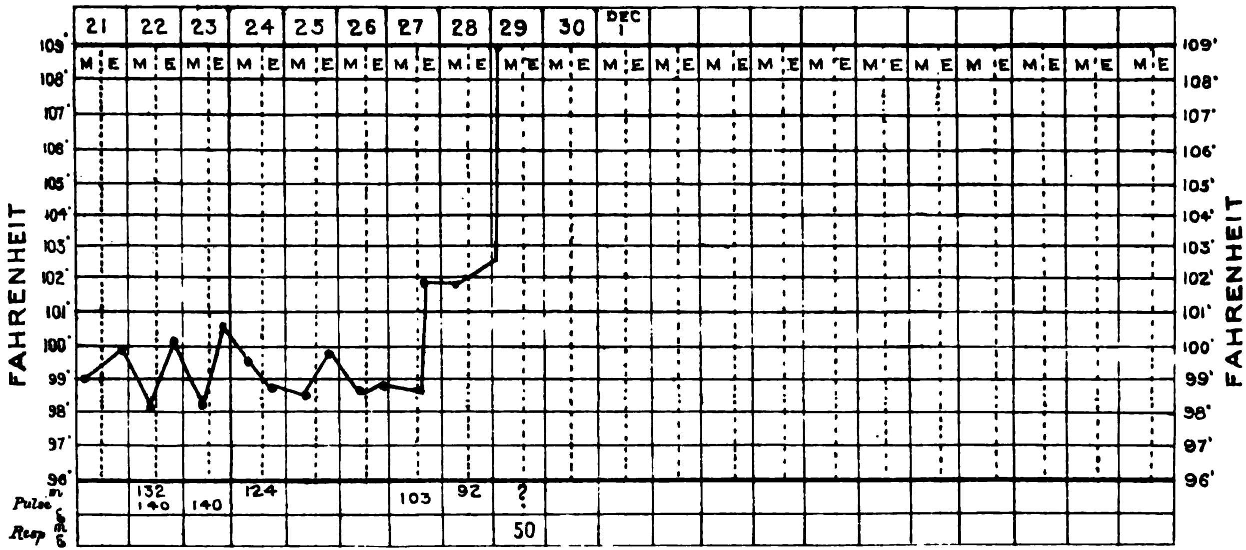
CASE.—B. C., age thirty; primipara; admitted to the Rotunda Lying-in Hospital April 8, 1892. Delivered 9th, after 13½ hours in labour, of a male infant, alive, and weighing 6½ lbs. Died April 9, 1892.

INTERESTING CASES.

Double Monster.

CASE.—M. B., aged twenty-seven; third pregnancy; was admitted to the Rotunda Hospital April 21, 1892. Patient was very large, and twins were palpated, but no second head could be felt. The fœtal heart was

MRS. D. AGE 20. HYPERPYREXIA. NOV. 20TH 1892



strong; a second could not be heard; so that the diagnosis was uncertain. Two right feet prolapsed and one was returned, and the left foot corresponding to the one down, was brought out. The third foot again prolapsed and was returned, but again prolapsing, all four were seized and traction made. After the breeches were delivered delay occurring, an examination was made, and the bodies were found united together above. The delivery effected by the Master was easy, and proved to be a double monster joined from the heads to the navel. The heads were fused together at each side of the occiput, and a face in front and another at the back. There was a hare-lip on one. The two arms, two legs, fingers, toes were normal. Was quite dead when born, and is now in the Museum of the Royal College of Surgeons.

Large Child.

Case.—The largest child was one weighing eleven pounds ten ounces, and measuring twenty-two inches.

Long Cord.

Case.—Was coiled four times round the neck, and was forty-six inches long. Mother had four previous pregnancies, and was twenty-six years old.

Atresia Hymenalis.

Case I.—A. F., aged twenty-two; primipara; hymen obstructed delivery, and was divided by scissors on head bulging. Puerperium was normal.

Case II.—L. V., aged twenty-one; primipara. Attention was drawn by one of our students to the condition by the small size of the passage on vaginal examination. It was found he was examining per urethram. The tough membrane was incised, and she delivered herself of a living child—breech presentation.

Hyperpyrexia.

We had two cases of very high temperatures—one fatal case of mania, which rose shortly before death to 109·4° (see chart), another in an infant which was premature, and lived in the incubator for a week, whose temperature in the rectum rose before death to 109°.

Interlocking of Twins.

Case.—M. B., aged twenty; first pregnancy; May 12, 1891. Males, 3¼ and 4½ lbs.; first breech; second vertex macerated; interlocking of heads. Vertex of second child perforated as it was diagnosticated dead. The first child died owing to the delay before its head could be delivered. Discharged 20th.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Forensic Medicine and Toxicology. By J. DIXON MANN, M.D., F.R.C.P., Professor of Forensic Medicine and Toxicology in Owens College, Manchester; Examiner in Forensic Medicine in the University of London and in the Victoria University; Physician to the Salford Royal Hospital. London: Charles Griffin & Co., Ltd. 1893. Pp. 639.

AFTER carefully reading and considering this work we have formed the opinion that it is by far the most reliable, most scientific, and most modern book on medical jurisprudence with which we are acquainted.

Forensic Medicine had to some extent fallen behind the other branches of medicine in regard to its recognised text-books; not many wholly new works have recently been published; most of those with which we were familiar were new and revised editions of antiquated volumes—good in their way but now out of date—in which there was to be found a curious mixture of ancient legend and modern scientific investigation. In most of those works statements were to be found in numbers which had been copied and reproduced by one writer from another, until they derived from age a claim to veneration which they could not obtain from modern investigation. In most of these works the framework, so to speak, is old; the superstructure new. In strong contrast with these stands Prof. Dixon Mann's work, breathing a scientific spirit in every page, referring constantly to recent physiological and pathological experiments, and showing itself to be a homogeneous book, the work of one mind, rather than a mere compilation of facts and ideas taken indiscriminately from every source.

The work is divided into three parts—Part I. treating of Forensic Medicine, Part II. of Insanity, and the remaining portion of Toxicology.

In the section on Forensic Medicine the chief point that strikes us is the amount of practical common sense displayed by the

author. Wild and absurd statements are not made on the authority of old writers; hence the work soon impresses the reader with a sense of reliability. The author has spared no pains in verifying his statements and quotations, and has made many references to recent foreign periodical literature. There are a few illustrations, most of which are good and instructive; but some are very rough and indeed ridiculous, especially that on page 199, which is intended to represent the position in which the body of a woman was found who had hanged herself from the leg of a table.

We notice that Prof. Mann gives what seems to us a rather curious explanation of the condition known as preternatural combustibility of the human body (the so-called spontaneous combustion). He says:—"It seems probable that in cases of preternatural combustibility inflammable gases are formed in the abdomen either during life or from abnormal changes which commence immediately after death; that the gas is accidentally lighted, and that its combustion raises the temperature of the soft tissues, especially the fat, so high that they become carbonised, and give off gases of an inflammable nature which also take fire." It seems to us that in many cases it is simpler to believe that the clothes of the alcohol-besotted individual may become accidentally ignited, and as they burn and char the skin the fat becomes melted and runs out, and that then the clothes go on burning like the wick in a lamp, while the liquefied fat takes the place of the oil.

Section II., on Insanity, is the shortest part of the book, occupying 76 pages, and is, in our opinion, the part most open to criticism. Under the head of Mania two varieties of acute mania are described—AcuteDelirious Mania, and Ordinary Acute Mania; but it is difficult from the description to see what distinction Dr. Dixon Mann draws between them. Chronic Mania is mentioned as existing, but no description whatever is given of it. We think that more attention might have been devoted to Dementia secondary to Mania, Melancholia, &c. It is one of the forms of insanity most frequently to be met with, but all that is said of it is comprised in eight lines, while eight pages are devoted to Moral Insanity and Impulsive Insanity. Criminal Responsibility, Testamentary Capacity, and the other medico-legal relations of lunacy are well and clearly discussed.

Part III., on Poisons, is very good. As well as the ordinary poisons, the toxic effects of many recently-introduced drugs are described, such as antifebrin, exalgin, and sulphonal. We think

that rather more detail might have been given to the matter of the treatment of cases of poisoning, as in these cases the practitioner is in a hurry to know not only what antidotes to use, but also what doses of them he may safely employ.

Although we have pointed out what are, in our opinion, a few defects, we have done so in no unfriendly spirit. On the contrary, we have formed the highest opinion of Prof. Dixon Mann's work, and recommend it to our readers as the best work extant on Forensic Medicine.

The Diagnosis of Diseases of the Nervous System: a Manual for Students and Practitioners. By CHRISTIAN A. HESTER, M.D., Physician to the Class of Nervous Diseases, Presbyterian Hospital Dispensary. New York and London: G. P. Putnam's Sons. 1892. Pp. 628.

THE author begins by describing briefly the structure and functions of the nervous system, in so far as such information is of practical importance in diagnosis. This chapter is illustrated by a number of figures, some of which are middling, while the rest are as bad as they can be. We have rarely seen a worse woodcut than Fig. 23, which is intended to show the descending degeneration which occurs after destruction of the motor areas in the cortex. The other chapters treat of the Symptomatology of Nervous Diseases, the Diagnosis of the Position of the Lesion, the Diagnosis of Clinical Types, the Distinction of Functional and Organic Disease, and the Mode of Examining the Patient.

We do not think very much of this book; most of what is necessary to learn about the diagnosis of nervous diseases may be learned from the ordinary works on Medicine, and if it is desired to have a book specially on diagnosis, there are already books in existence, in our opinion, superior to that before us.

Transactions of the Association of American Physicians. Seventh Session, held at Washington, D.C., May 24, 25, and 26, 1892. Volume VII. Philadelphia. 1892. Pp. 355.

IT is remarkable that an Association which can issue an annual volume of Transactions of the highest value, and which has the United States and the Dominion as a recruiting-ground, should

number less than one hundred members, and muster less than half of them at its annual meeting. So long, however, as we continue to receive such contributions to medical science as this volume contains we have no ground for complaint. Of the twenty-two papers the first, the longest, and the most elaborate is "A Bacteriological Study of Drinking-Water," by Dr. Vaughan, Professor of Hygiene in the University of Michigan. For three years and a half the subject had occupied much of the time and attention of the author. One hundred and forty-eight waters were examined, and results and methods are here detailed in full. Dr. Vaughan has been convinced by his researches "that the Eberth germ, as found in the spleen and other organs after death, is not a specific micro-organism, but is a modified or involution form of any one of a number of related germs," either different species or different varieties. He knows no crucial test, or combination of tests, which would justify him in pronouncing that "a germ which I may find in drinking-water is identical with the so-called typhoid bacillus." In the discussion which followed the presentation of the paper the Professor expressed a decided opinion, which we shall quote, upon a question still undecided:—

"Some have said that I do not believe that one case of typhoid fever will cause another. I have never said anything of the kind. There is no question that the great epidemics in the cities generally start from the pollution of the drinking-water with typhoid stools. Certainly if people drink the stools of a typhoid patient an epidemic of typhoid fever may appear. But I do believe, and I think I have good reasons, derived from both laboratory and clinical experience, that typhoid fever may originate without a pre-existing case of typhoid fever. . . . I have seen cases of typhoid fever scattered among the farming population, among men, women, and children who have not been off their farms for weeks, and it would take a good deal to convince me that there was a common source of infection in these cases. I know that some will say that there has been a walking case of typhoid going through the country, and that he has polluted all these wells, but I do not believe it. I believe there are different germs, or different varieties of the same germ, that may cause typhoid fever, and that they are widely distributed."

The prominence which enteric fever takes in the minds of American physicians may be inferred from the facts that the paper on drinking-water, which we have just noticed, is mainly concerned with this one disease, and that the second in this volume is devoted to the "Treatment of Enteric Fever by Cold Baths,"

which is strongly advocated by Prof. Wilkins, Physician to the Montreal General Hospital. Dysentery, also, appears to occupy western physicians almost as much as eastern. Reading over Dr. A. Brayton Ball's paper we were surprised to find that the ipecacuan treatment of this disease, which proved so potent in India, was never received with much favour in America, "partly on account of the frequency with which depressing effects have been met with, and partly because the superiority of this over less objectionable methods has not been demonstrated for the dysenteries of this country." Dr. Ball thinks it probable that the class of cases, occurring in tropical and sub-tropical climates, in which ipecacuan in large doses has been found so powerful a remedy may have been of "amœbic" origin. In his own (New York) practice he prefers quasi-homœopathic doses of the drug—one-fourth of a grain every half hour. The treatment with calomel, long since abandoned in India, is almost obsolete in the United States also; but the author hints that the reaction against the use of calomel may have gone too far. It will be remembered that in 1863, during the Civil War, Surgeon-General Hammond withdrew calomel altogether from the list of drugs supplied to the army, on account of the mischief wrought by its indiscriminate use, in dysentery and diarrhœa especially. There are two other papers on dysentery in this volume, and one paper on hepatic abscess. A table in the last gives 31 cases of hepatic suppuration, out of 110, as due to dysentery—28 per cent.

There are two or three things which we think worthy of brief mention before concluding our notice of this interesting volume. Dr. Latimer, of Baltimore, gives a summary of 2,012 cases of alcoholism and his conclusions as to treatment. None of the symptoms, he says, are due to abrupt withdrawal of alcoholic stimulus; alcohol in any form or quantity is unnecessary for successful treatment, and it is usually hurtful. "The absolute and immediate withdrawal of alcohol is of the first importance in the treatment of all the symptoms due to its excessive use, even in cases characterised by great feebleness and inability to partake of food." Forced feeding is rarely necessary or useful.

Dr. Sternberg, Lieutenant-Colonel and Surgeon U. S. Army, in a paper on "Bacteriological Researches" tabulates Pasteur's results in the treatment of rabies in 1890. In A Class (biting animal proved rabid) 416 cases with no death; in B (animal pronounced rabid by veterinary surgeon) 909 cases, 4 deaths—0·44

per cent.; in C (animal suspected only) 215 cases, 1 death—0·46 per cent.

Epitome of Mental Diseases, &c. By JAMES SHAW, M.D., Q.U.I. Bristol: John Wright & Co. 1892. 8vo. Pp. 345.

THIS book suffers very badly from over condensation. It is described as being intended for a "handy and practical book of reference," and also for a guide or introduction to more special treatises. The author is full of his subject, and wants the art to blot. He is conscientiously anxious to say something about everything connected with insanity, and he is resolved to say it within the limits of a not too corpulent small octavo. The result is a work which will nearly fit into a large pocket, though its contents will by no means fit into any brain. It is painfully evident by many signs that the book has been written in a hurry. Thus the preface contains a quantity of material which ought not to be in a preface, but which seems to have been omitted through haste from its proper place in the text. Following the preface is a reference list of books and journals referred to or consulted. Surely this has been compiled rather with a view to complimenting the author's teachers than as a hint to students where to look for further guidance. It consists of such names as Savage and Winslow, Meynert and Stretch Dowse, Bevan Lewis and Batty Tuke, thrown together quite indiscriminately.

After a brief mention of definitions, Dr. Shaw proceeds in his first chapter to classification. This is, no doubt, wrong, unless names are more important than things, classificatory schemes than the subjects classified. The author seems to have felt this, for he recommends that the reader should begin with Chapter II. Twelve schemes are mentioned of all varieties of worth, and no attempt is made to explain, and no hint is here given which the author prefers, though in the preface he recommends that of von Krafft-Ebing, and, as we think, rightly. Anything more calculated to perplex the reader, not already thoroughly conversant with the subject, it would be hard to imagine. But if Chapter I. perplexes, Chapter II. certainly tends to mislead. It consists of "an index of symptoms, somatic and psychical, with the mental diseases in which they occur." It is clear enough that the proper place in which to describe and weigh symptoms is not an index, yet the author wishes that this chapter should be the student's

first introduction to the subject-matter of the treatise. The only use which such an index is likely to serve practically is that of a sort of depository for labels. When the student meets a symptom he turns in here for a label, and unless he knows all about the thing already (in which case he hardly wants this index), he is sure to make the most absurd mistakes. Thus what errors may he not be led into by this sentence: "*Concentration of the intellectual operations round one idea or set of ideas*, in folie du doute." If this sentence is of any value it signifies that one may accept the symptom in question as pathognomonic of the disease named, and this is incorrect. But, in fact, one would require to be already thoroughly acquainted with folie du doute to understand in what sense the "symptom" and the affection are connected. Some of the paragraphs in this chapter are trivial—as, "*attitude immobile*, in simple melancholia; *attitude insinuating*, in sexual perversion (erotomania); *attitude listless*, in atonic simple melancholia." Some are concentrated out of all significance—as, "*acts, extraordinary*, in moral insanity;" or "*imagination weakened*, in chronic alcoholic insanity."

Chapter III. is "an index of mental diseases with their synonyms and symptoms." The alphabetical method or method of arrangement in an index is certainly the most repulsive mode in which instruction can be given. In a dictionary it is necessary, because the object is to find the definition of a word, but we fail to see what place it has in a treatise, and the more brief the treatise the more faulty is the method. In the present chapter, less than 100 pages in length, we have a description of mental diseases and their symptoms, beginning with "Insanity from Abdominal Disorders," and ending with "Delirium of Young Children." Assertions are raked together from various authors with little appearance of selection and no digestion, and the reader is left to build up what coherence he can out of a mass of notes and extracts. Under the head of primary confusional insanity, Spitzka is quoted as telling us that "this disorder is rare," but Dr. Shaw identifies it with the *Wahnsinn* of v. Krafft-Ebing, which is certainly one of the commonest of mental diseases. The discrepancy is not noticed. Among the synonyms which are given for folie du doute is "Geistesstörung durch Zwangvorstellungen." Now, these conditions are allied, and one sometimes contains the other, but they are in no way synonymous, for they are in no way equivalent. This chapter, like the preceding, reads as though it were put

together by verbatim copying from the note-book of an industrious and unprejudiced reader.

Chapter IV. deals with Etiology, V. with Diagnosis, VI. with Prognosis, VII. and VIII. respectively with Pathology and Therapeutics. They are all written in the same fragmentary and undigested fashion as the earlier parts of the book, and they repel by the index or catalogue form of arrangement. They contain, in our opinion, many errors, but it would, perhaps, be unfair to blame Dr. Shaw for these, as his book so bristles with the names of learned authorities that it is hard to know for what opinion he is himself responsible.

The last chapter in the book (IX.) is the best. It contains a good epitome of the English law as to certifying for lunatics, &c., also sketches of the Scotch and Irish laws, the latter being prepared, Dr. Shaw tells us, from information supplied by Dr. Myles, of the Kilkenny Asylum.

On the whole, we must say this work shows very extensive reading and very commendable industry. We are sorry the result is not better, but Dr. Shaw has attempted what is wholly impossible—namely, to make a coherent building stone out of a handful of sand without any kind of cement whatever. Real brevity is not to be attained by laying before students a mass of disconnected facts and short statements culled from works which must themselves be consulted and compared if the reader is to comprehend some of the statements and to give the rest their true value.

We hope when Dr. Shaw next writes a book he will "take courage to be wise," and either that he will give to his readers his own personal observations, or if he must interpret the views of others, that he will deal with these in such a manner that by selection, digestion, and plentiful ejection he may be able to give his students a more satisfying mental repast than is to be found in this index-shaped epitome.

Transactions of the Royal Academy of Medicine in Ireland. Vol. X. Edited by WILLIAM THOMSON, M.A., F.R.C.S., General Secretary; Surgeon to the Richmond Hospital, Dublin. Dublin: Fannin & Co. 1892. Pp. 463.

THE Royal Academy of Medicine maintains, with a slight increase, its numerical strength. It fails, we regret to observe, to attract

students. The meagre list of Student Associates was reduced by nine names during the year to which this volume belongs, and only seven of the hundreds who study medicine in Dublin care to join the Academy. The cause of this abstention is deserving of investigation by the Council.

This volume of *Transactions* comes up to the high level of the Academy's previous publications. In one respect there is improvement. We had repeatedly urged the desirability of printing the discussions which follow most of the papers read. The Councils of the Medical, Obstetrical, and Pathological Sections took the matter up, and the result was the appointment of a sub-committee, which recommended the reporting and permanent record of the discussions. Accordingly, these are now, with great advantage, printed at the end of each paper.

It is natural that in Dublin enteric fever should occupy the attention of the profession to a considerable extent, and one-fourth of the papers in the Medical Section are devoted to this disease. Dr. M. A. Boyd contributes a short essay "On some recent Modifications in our Views of Enteric Fever and its Treatment," in which he points out the effects which the discoveries of Koch and Eberth have produced on medical opinion since Murchison's time. The ætiology of the disease, its special prevalence in the autumn, the susceptibility of glandular tissue to the action of bacillary toxin, and the efficacy of antiseptic treatment, are examined in the light thrown upon them by modern pathology. With regard to the last subject, Dr. Boyd recommends, as the result of his own experience, the administration of chlorine, preferably in alkaline solution—a remedy which Murchison had employed empirically. "That this method of treatment produces a fall in the temperature, and makes the type of disease milder, there can be no doubt, and in over a fourth of the cases when begun early it brings the febrile process to an end about the fourteenth or sixteenth day."

In the Surgical Section Dr. Heuston publishes a remarkable case of successful trephining for "traumatic epilepsy, aphasia, and paralysis of six years' duration." Dr. Buxton's paper "On Anæsthetics" appears to be dislocated from the Surgical into the Obstetrical Section, and to be more concerned with chloroform than with anæsthetics generally; but, in spite of this limitation, coming from an expert in "anæsthetising," it will be read with interest and advantage. The author is "Administrator and Teacher of Anæsthetising in University College Hospital," and

"Anæsthetist in the Hospital for Paralysis, Queen's-square, London."

Two subjects of great practical importance are treated of in the Pathological Section, which is generally devoted to solitary "cases." Dr. Parsons discusses the relation of fowl tuberculosis to the human disease, but is compelled to leave unanswered the question "Are men susceptible to fowl tubercle bacilli?" In the present state of our knowledge the evidence inclines to a negative reply. Dr. A. W. W. Baker's paper on Dental Caries is too short; for the subject, in these degenerate days, interests most of us—almost all, indeed, who have any teeth left. Anyhow, it is pleasant to learn that we board and lodge in our mouths perhaps one hundred, and certainly six, species of uninvited guests with names of length ludicrously disproportionate to their own. A hint of some summary method of extirpation would have been welcome, but did not come within the scope of Dr. Baker's paper.

Only four papers were communicated to the Section of State Medicine, but they compensate for their paucity by their value. Mr. Flinn's accounts of the Pollution of our South-eastern Foreshore, and of Some Modern Methods of Sewage Treatment, are of special interest at the present time. Of more permanent, if of somewhat less pressing, interest are Dr. Cosgrave's subject, the Control of Inebriates, and Dr. Falkiner's, the desirability of compulsory notification of Primary Syphilis and Tubercular Phthisis.

The papers read before the Section of Anatomy and Physiology, six in number, were interesting chiefly to experts in the former subject—one which most of us spend years to learn and weeks to forget.

Diseases of the Skin: their Description, Pathology, Diagnosis, and Treatment. By H. RADCLIFFE CROCKER, M.D. Lond. Second Edition with 92 Illustrations. London: H. K. Lewis. 1893.

IT is an easy as well as a grateful task to notice the second edition of this treatise. Dr. Crocker in his first edition produced an excellent work—the best that has yet sprung from the English press—and it was warmly received by the profession. It is almost needless to say that many improvements have been made in the second edition, and every page bears the mark of having been carefully gone over.

The most important of the new articles included in this issue are erythema induratum, hydroa vacciniformis, pityriasis rubra,

pilaris, Morvan's disease, Darier's disease, angioma serpiginosum, angiokeratoma, phagedæna tropica, seborrhœic dermatitis, adenoma seborrheum, actinomycosis, and epidemic exfoliative dermatitis. Many minor additions might be mentioned, and due notice is taken of recent advances in pathology which have given us clearer insight into the relations of various diseases and groups of affections. Of these may be instanced impetigo contagiosa, boils and carbuncles, the group of diseases due to tubercle bacilli, and the seborrhœic group. Several new original illustrations are also introduced, and it is evident that great pains have been taken to bring the book fully up to date.

A sensible healthy tone pervades the entire book, and the directions for treatment are complete and serviceable. We cordially recommend Dr. Crocker's work to all our readers who desire to possess a modern, authorititave, and practical exposition of the important subject of dermatology.

Illustrations of the Nerve Tracts in the Mid- and Hind-Brain, and the Cranial Nerves arising therefrom. By Alex. Bruce, M.A., M.D.; Lecturer on Pathology in the Edinburgh School of Medicine. Edinburgh and London: Young J. Pentland. 1892.

For several years Dr. Bruce has been engaged in a laborious research into the structure of the medulla, pons, cerebellum, and mesencephalon. Some of his results he has at different times communicated to the Royal Society of Edinburgh, whilst on more than one occasion he has demonstrated the beautiful specimens which he has made at the meetings of the British Medical Association and elsewhere. Anatomists, therefore, were in some respects, prepared for the appearance of the magnificent atlas of plates which he has recently published, and which incorporates in one volume all the results at which he has arrived. This is unquestionably the most important work on the minute anatomy of the brain which has appeared in this country for many years. There are no plates which give so clear and consecutive a view of the different strands of nerve-fibres, or which depict so faithfully the disposition of the various nuclei of grey matter in the sections of the brain which are dealt with. To the student of brain anatomy this atlas may almost be considered indispensable, whilst the physician will find in it a ready and easy means of refreshing his memory on

those intricate points of brain anatomy—a knowledge of which is so necessary for the proper diagnosis of many nervous affections.

The drawings in the plates are taken chiefly from specimens which have been obtained from the fœtus and new-born infant. Sections in various directions through the parts of the brain dealt with are represented, and the drawings from the sections have been made by means of the camera-lucida with the view of obtaining absolutely trustworthy outlines. As specimens of lithography, the plates are admirable, but it is to be regretted that the names of the different parts delineated have been printed in fanciful old English type instead of in plain letters. The reference lines also might, with advantage, have been drawn very much lighter. These are small defects and hardly worth mentioning, were it not that the drawings themselves are so fine that it is a great pity to see the effect marred by a blemish which could have so easily been obviated.

The plates are accompanied by several chapters of excellent text, which deal in an exhaustive manner with the constitution and connections of the tracts of the medulla, pons, and mesencephalon. This part of the work is illustrated with numerous diagrams, which greatly assist the reader in grasping the intricate details which are described. The account which is given of the restiform body, the fillet, and the posterior longitudinal bundle, is especially deserving of attention, whilst not the least interesting chapter is that which is devoted to the consideration of the origin of the cranial nerves.

The volume is very appropriately dedicated to Sir William Turner, the anatomist in this country who has, perhaps, done more than any other to advance our knowledge of brain anatomy.

HYDROCHLORATE OF PHENOCOLL.

G. CUCCO (*Ther. Monatsh.*) has been employing the hydrochlorate of phenocoll in malaria with marked success. He prescribes 15 to 25 grains twelve hours before the expected attack, and continues the medicine for at least seven days after the attack. Some cases are cured by a single dose, but they are the minority. Gastro-intestinal irritation does not contra-indicate the use of phenocoll. Of 84 cases treated with the remedy, 52 recovered, 21 were benefited, and in 7 the effects were *nil.* He found that certain persons who could not bear quinine took phenocoll without any unpleasant results, and with marked benefit. Phenocoll and quinine combined gave good results.—*Les Nouveaux Remèdes*, No. 9.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

The Powers and Duties of Sanitary Inspectors.[a] By JOHN BYRNE POWER, M.R.C.P.I., L.R.C.S.I.; Dipl. State Med., R.C.P.I.; Superintendent Medical Officer of Health, Kingstown, Co. Dublin; Physician, St. Michael's Hospital.

THERE was little attention paid to sanitation in mediæval England. A learned writer—the late Mr. Denton—described the condition of London in the days of the early Plantagenets. "Occasionally a rude pavement added to the comfort of foot passengers, and spared them the necessity of floundering through the deep mire of the roadways. These pavements, however, were very partial, and passengers made use of the highway, soft with mud and filth thrown from the houses, and obstructed with heaps of manure in which dogs and swine made their lairs. The latter animal was so useful a scavenger, and could be kept at so little expense as to account for the pig-styes which stood in the main streets of all our towns, even in London. When a royal procession was expected to pass along the narrow roadways, dogs and pigs were driven indoors, and gravel was thrown down to make the road passable."

Some attention began to be paid to sanitation in the reign of Edward the First, and Mr. Wilson, in his excellent little book, "Guide for Inspectors of Nuisances," the perusal of which I would strongly recommend to my readers, mentions several of these early enactments. A statute passed in the 12th year of the reign of Richard II. directs that "none shall cause to be cast away any garbage, dung, entrails or any other annoyance into the ditches, rivers, waters, or other places

[a] A Lecture delivered at the Technical Schools, Kevin-street, Dublin, on May 20, 1898, under the auspices of the Sanitary Institute of Great Britain and Ireland.

within or near any city, borough, or town, or the suburbs thereof, in pain to be called by writ before the Chancellor, and, if found guilty, to be punished at his discretion."

In the reigns of Elizabeth and Charles I. we find enactments against overcrowding and against the sale of unwholesome foods, for the keeping of highways, the paving of streets, &c. The occurrence of the great plague of London led to many enactments and municipal regulations. The carrying out of some of these would appear cruelly oppressive to us in the present day. Old Acts regulated bake-houses and permitted search for "garbled" or adulterated articles of food.

All these laws presuppose the action of persons to carry them into effect—officers whose powers and duties would be similar to the modern inspectors of nuisances. That such officers were not appointed in England is shown by an interesting contemporary dialogue on the condition of England in the reign of Henry VIII., published by the early English Text Society. In this work, the writer, Starkey, makes Cardinal Pole say (p. 177)—"And convenient it were, officers to be appointed to have regard to the beauty of the town and country, and the cleanliness of the same, which should cause great health also, and, as I think, be the great occasion that the pestilence should not reign so much as it doth with us in our country." The omission to appoint such special officers noted by Starkey in the middle of the Sixteenth Century was not remedied till the middle of the Nineteenth Century, in the reign of her present Majesty. Without efficient inspection all these early laws as to the removal of nuisances and regulations as to offensive trades were of little or no avail, and we learn from the dialogue above quoted that the towns of England compared most unfavourably with those of Flanders and France in the Sixteenth Century. Notwithstanding the great advances made in sanitary law, the condition of some of the streets in London, as described in Moritz's Travels in England in 1782, shows that much remained to be done. He says—"Nothing in London makes so disgusting an appearance to a foreigner as the butchers' shops, especially in the environs of the Tower. Guts and all nastiness are thrown into the middle of the street, and cause an intolerable stench."

But any attempt to give a detailed account of the sanitation of the past, although an interesting subject, has little or no relation with our business to-day; we are concerned only with modern sanitation, which only assumed its present form within the last half century. In 1847 the Towns Improvement Clauses Act was passed, and under this Act the office of Inspector of Nuisances was first established—a measure which, in my opinion, rendered the efficient carrying out of sanitary legislation for the first time possible.

The great epidemic of cholera, in 1832, first drew public attention to the dwellings of the poor, and the report of the Commission on the

Sanitary Condition of the Labouring Population of Great Britain "may be regarded," says Professor Gardner, "as the trne starting point of modern sanitary legislation." For practical purposes the comprehensive Public Health Act, 1878, is all that I need refer to, as it incorporated and amended most of the preceding sanitary Acts.

I shall now proceed to lay before you an abstract of the powers and duties of the Sanitary Inspector or Sanitary Sub-officer, as laid down in the Act, and the various orders and memoranda made by the Local Government Board in pursuance of that Act.

The first matters to be considered are the qualifications and modes of appointment to this office. In this country as yet there is no examination test established. London, however, has set the example of requiring certificates of having passed the examination of the Sanitary Institute of Great Britain and Ireland, and, as announced, such an examination will be held at the close of this course of lectures. No doubt such examination will shortly become compulsory. Besides these examinations there should be some rules for the selection of candidates fit to discharge the onerous duties of the office. For instance, as to age, as remarked by Dr. Wynter Blyth, the candidate should not be under twenty-one or over forty years of age, and should labour under no physical defect interfering with the discharge of his duties. As to the degree of education, the candidate should, of course write a good hand, and be able to draw up an intelligible report, and fill up correctly all the necessary forms. He should be able to make all calculations as to cubic contents of rooms and other spaces which he may be called upon to inspect and report on. He should have some knowledge of the principles of construction of water-closets, privies, ash-pits, and especially of drains, their levels and connections. He should be acquainted with the principles of ventilation and building construction generally, as far as sanitation is concerned. He should be acquainted with the various ordinary means of detection of unwholesome meat and other foods. He also should be familiar with the ordinary disinfectants, and the methods of using them. He must be well acquainted with the law of nuisance and general sanitary law, as far as they apply to the functions of his office. This is especially necessary where, as in many instances, ordinary prosecutions before the magistrates are conducted by him. All these matters are dealt with in this course of lectures. Although these subjects cover a large field, yet the amount of knowledge is not extensive, and the whole is well within the limits of a person of ordinary intelligence. In rural districts the relieving officers and the collectors of poor rates are alike eligible for the office.

The possession of a quiet urbane manner is, indeed, another great qualification in the sanitary sub-officer, by means of which he will effect a great deal, avoid law, and save much trouble to himself and his sanitary authority. A candidate so qualified is appointed by the local sanitary

authority—that is, in the case of urban districts, the Corporations or the Town Commissioners, and in rural districts the Guardians of the Unions. All sanitary appointments must be confirmed by the Local Government Board, and are held for life, or until dismissal by the sanitary authority, with the consent of the Local Government Board, which also possesses the power of dismissal by its own action.

The principal function of the sanitary sub-officer is inspection, and under the Local Government Board Order of the 8th August, 1879, paragraph 1, he is directed "by inspection of the district to keep himself informed in respect to any nuisance existing therein that requires abatement under the Sanitary Acts, and if he shall receive notice of the existence of any nuisance within the district he shall as soon as practicable visit the place and inquire into such alleged nuisance." Being satisfied that a nuisance requiring to be abated exists, if his district is in certain cities, Dublin, Belfast, Cork, or Limerick, in this case his duty is to notify the same in writing to the sanitary authority. In all other districts, rural and urban, he is ordered to notify forthwith to the medical officer of health for the district, specifying the nature of the case, the situation of the premises, the name of the owner or occupier in form A in the schedule B annexed to the Order. He is to preserve a copy thereof in duplicate which, or an abstract thereof, he shall submit to the sanitary authority at each weekly meeting, and he shall report to the sanitary authority any other matter affecting or threatening to affect injuriously the public health within his district.

Under paragraph 7 of the same order he is ordered to attend the meetings of the sanitary authority whenever required so to do, and to assist at all proceedings in which his assistance may be required.

Under paragraph 8 every sanitary officer appointed under this Order shall, in matters not specifically provided for in the Order, observe and execute the instructions of the Local Government Board and all lawful orders and directions of the sanitary authority.

The duties laid down in the above Order do not explicitly include all the duties which fall within the province of the sanitary sub-officer. Other matters in connection with offensive trades, domestic water supply, unwholesome or adulterated food and drugs, drainage, refuse removal, infectious diseases, and soforth, I will speak of further on. To facilitate the orderly discharge of his duties the sanitary sub-officer should have a fixed hour in the forenoon and in the afternoon during which he can be seen on the sanitary affairs of his district.

The sources from which the sanitary sub-officer derives his power are, the provisions of the Sanitary Acts, Orders of the Local Government Board, and the Local By-laws.

Ample protection is afforded him in the discharge of the duties of his office. Under Section 264 of the Public Health Act he is not liable to

any action in respect to any matter or thing done by him while acting under the directions of the sanitary authority, and he is also protected in the discharge of his duties under the Infectious Diseases Prevention Act, by the provisions of Sections 16 and 17 of this Act. He cannot force an entry into any premises, but, if entry is refused him, his course is to give notice in writing to the person having custody of the premises of his intention to apply for a magistrate's order to inspect. This order is granted by any magistrate on affidavit made by the sanitary officer, and furnished with this order entry cannot be refused him under a penalty not exceeding £5. In the case of common lodging-houses his right of entry is more extensive, as under Section 96 of the Public Health Act he is authorised to enter any such house at any time, refusal rendering the keeper of the house liable to a penalty not exceeding £5.

As we have already seen, the sanitary sub-officer is bound to make immediate inspection of any premises where a nuisance is alleged to exist, but he is also directed to make himself acquainted with the sanitary condition of his district, and to do this he must make a systematic inspection for the detection of nuisances, and, in doing so, he should have regard as far as possible to the condition of the different portions of his district—well-to-do portions will not require as frequent inspection as poor and overcrowded ones, nor as places where noxious trades are carried on. Again, certain nuisances occur only at certain times of the year, such as the keeping of milch cows in sheds during the winter months, the overflowing of drains, sewers, and cess-pools in rainy weather, and it may be said that all sanitary defects are, as a rule, intensified by the high temperature of summer. Then again certain trade premises are likely to become offensive only at such times as the business is being carried on or immediately afterwards, such as slaughter-houses on and after the killing days, soap and candle manufactories on boiling days, and soforth.

The sanitary sub-officer acts, as we have seen, under certain legal regulations, and is protected in his action as has been indicated. He generally acts under the directions of his sanitary authority, but the question may be asked how far he can act independently of such instructions. There are few circumstances under which he can act independently, and it would be obviously injudicious on his part to attempt to enlarge the scope of such action. Under Section 59 of the Public Health Act, in urban districts only, when it appears to him that any accumulation of manure, dung, soil, filth, or other offensive or noxious matter ought to be removed, he shall give notice to the person to whom the same belongs, or to the occupier of the premises whereon it exists, to remove the same; and if such notice is not complied with within 24 hours of the service thereof, the offensive matter becomes vested in, and is to be sold by, the urban sanitary authority. In such

cases he can thus deal summarily with the matter, or he can proceed to have the matter dealt with as a nuisance under Section 107 of the same Act. This is one of those cases in which by tact and discretion the sanitary sub-officer will avoid legal delay, expense, and trouble. Again, under Section 132 of the above Act, the action of the sanitary sub-officer is independent so far as the seizure of articles of food which appear to him to be unsound; it is to be observed, however, that the seizure in this case is only for the purpose of causing the article of food to be carried before a justice in order to have the same dealt with under the Act. The legal points in connection with such seizure will be discussed in the lecture on sanitary law.

One of the most important duties is that of inquiring into complaints of the existence of nuisances and any breach of the sanitary by-laws and regulations within his district. These are of very frequent occurrence, and may be made to the officer either verbally or in writing, but if in writing they are frequently addressed to the sanitary authority direct or entered in the complaint book by the complainants themselves. Through whatever channel the complaint may reach the sanitary sub-officer, it is his duty to inspect the premises as soon as practicable and to keep such record of his inspection as the sanitary authority may direct to be kept. Many of the complaints about minor matters will probably be rectified on notice from the officer himself, but in cases presenting any difficulty he should refer to his sanitary authority and receive instructions how to proceed. In all cases of complaint he must endeavour to ascertain if the complaint is made in good faith or tainted by malice, and, also, whether the matters complained of are such as ought to be remedied by the landlord and do not fall within the province of the sanitary authority.

Though there are no duties specially assigned to the sanitary sub-officer as regards domestic water supply, yet as there is no matter which can affect or threaten to affect so injuriously the public health within his district as a defective or unwholesome domestic water supply, the duty of inspecting and reporting thereon must be taken to attach to his office under paragraph 1 of the Local Government Board Order already quoted. These duties are specifically attached to the office by the Local Government Board in England. In districts where the water supply is natural, being derived from wells or running streams, it will be his duty to report on any circumstance which pollutes or would tend to pollute these sources. In urban districts, where the supply is usually artificial, being conveyed in pipes, it is his duty to report on any defect in, or injury to, the public fountains, and also to see that no filth or other noxious matter is deposited near them. As regards the water supply within or immediately adjoining the dwelling house, he must bear in mind that water in cisterns is liable to become polluted by exposure to the foul air emitted from defective drains, or traps, or from water

closets, especially when the drinking supply is taken from the same cistern; these details, however, have all been fully dealt with in the lecture on plumbers' work and water supply, and therefore need no further comment by me. In all cases where water is suspected of being impure it is his duty to procure specimens for analysis by the analyst.

It is the duty of the sanitary sub-officer to inspect from time to time, or immediately on complaint, all places where any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour, milk, or butter are exposed for sale and intended for the food of man; and if on inspection such articles appear to him to be unsound, he can seize them and cause them to be carried directly before a justice, who has the power of ordering them to be destroyed and of inflicting a penalty on the person exposing them for sale; and any person obstructing the officer in the discharge of this duty is liable to a penalty not exceeding £5. The plea, if raised, that the articles seized were not intended for the food of man, in every case must be proved by the party offering them for sale. In districts where Part III. of the Public Health Acts Amendment Act, 1890, is adopted, these powers are extended to all articles of food.

The power of seizure in the Irish is more extensive than that given by the English Act, as the sanitary sub-officer is authorised to seize such articles while being carried through the public thoroughfares to be exposed for sale. In this case he is empowered to demand the name and address of the person carrying it, and if he has reasonable grounds for suspecting the name and address given to be false, he may detain the party and give him into custody. Under the Dublin Corporation Act the purchaser of any article of food, enumerated in the Act, which appears to him to be unsound, may deliver it to the sanitary officer of the Corporation for the purpose of having it carried before a justice.

The sanitary sub-officer may be appointed to act as inspector under the Sale of Food and Drugs Act, 1875. In this case it is his duty to obtain samples of food and drugs, and if he suspects them to be adulterated, he shall submit the same to be analysed by the analyst for the district. Before obtaining the sample he is bound to notify to the seller his intention of having the article analysed, and he must offer to divide it into three parts, to be then and there separated, marked, and sealed, one to be delivered to the seller, one to be preserved for further comparison, and the remaining third part to be delivered to the analyst. Should the seller refuse to divide the sample, the officer sends the entire to the analyst, who is bound to divide into two parts, one part the analyst either returns at once to the officer, or delivers it to him subsequently along with the certificate of his analysis. If the analyst does not live within two miles of the officer, the article may be forwarded to the analyst by registered letter.

It is the duty of the sanitary sub-officer, especially in an urban sani-

tary district, to make himself acquainted with the sewerage system of his locality, and also the house drains in connection therewith. The principles of house drains and sewerage construction have been treated of, as far as such knowledge is required for the sanitary inspector, and it is his duty in every case to see that the drains are constructed in compliance with these principles. He will learn much by consultation with the Town Surveyor and by the result of his own inspections.

In addition to his statutory duties, as to the removal of offensive matter, not conveyed away by drains and sewers, there may be in his sanitary district special arrangements for the disposal of such refuse; and any neglect in the carrying out of these regulations should be notified to the sanitary authority, so that no accumulations tending to create a nuisance shall occur.

Another set of important duties to be performed by the sanitary sub-officer are those in connection with the occurrence of infectious diseases within his district. These duties are clearly laid down in the 9th paragraph of the Order of the Local Government Board in England. The sanitary inspector is directed to deal with a case of infectious disease as he would with a nuisance—that is to say, he is to report the matter to the medical officer of health and also to the sanitary authority. In Ireland the matter is not clearly laid down, though the intention is doubtless the same. His proper course would appear to be to report the matter to the medical officer of health, and he certainly is bound to report to the sanitary authority a case of infectious disease as "a matter affecting, or threatening to affect injuriously, the public health within the district." This is one of those cases where the officer should obtain general instructions from his sanitary authority. The provisions of the Public Health Act, and subsequent Acts bearing on infectious diseases, are mainly directed to the following objects:—First, the removal of persons suffering from infectious diseases to a suitable hospital where their own dwelling or lodgings do not afford proper accommodation or the necessary isolation required in such cases, especially in dairy premises. Secondly, the retention of such patients in hospital until all danger of infection has ceased. Thirdly, to prevent persons suffering from infectious diseases frequenting public places. Fourthly, to prevent the exposure of bodies, as at wakes, of persons who have died of infectious disease, and to ensure the speedy burial of same. Fifthly, the disinfection of houses and conveyances. Sixthly, the disinfection of clothing, bedding, &c. The carrying out of all or any of these provisions may fall to the sanitary sub-officer—for example, the justice's order for removal of a case of infectious disease to hospital, may be directed to him under the Infectious Diseases Prevention Act, and all infringements of these Acts and Orders should be reported by him to the sanitary authority.

Certain premises must be registered according to law. They are slaughter-houses, common lodging-houses, and dairies and dairy yards. Registered premises are placed under the supervision of the sanitary sub-officer. As regards dairies and dairy yards, the inspection of these premises is performed by a special inspector of dairies, and cannot be reckoned amongst the duties of the sanitary sub-officer. All registered premises of any kind must have a legible notice of their registration displayed in a conspicuous position on the premises; every breach of this regulation should be notified to the sanitary authority.

The Public Health Act authorises the sanitary authority to erect abattoirs in which case they are bound to make by-laws regulating their use; and the sections of the Towns Improvement Act, 1847, incorporated in the Public Health Act, enables the sanitary authority to make by-laws for the regulation of all slaughter-houses and knackers' yards existing or in future to be erected in their sanitary district. It is the duty of the sanitary sub-officer to see that such by-laws and regulations are carried out, and for that purpose he has right of entry into such premises at all reasonable hours.

The next class of registered premises is common lodging-houses.

The definition of a common lodging-house given in the Act is "a house in which, or in part of which, persons are harboured or lodged for hire for a single night or for less than a week at a time." The sanitary authority is compelled to make by-laws regulating common lodging-houses, to prevent overcrowding, to promote cleanliness and ventilation, for proper precautions against infectious diseases, and the general well-ordering of such houses. It will be the duty of the sanitary sub-officer to make himself acquainted with all such by-laws in force in his district, and to take steps to enforce them. There are special provisions in the Public Health Act obligatory on the keepers of common lodging-houses. They are obliged to limewash the walls and ceilings of each house during the first week in April and October in each year. The keeper of a common lodging-house in which beggars or vagrants are received must report, if required in writing to do so, to the sanitary authority, any person who resorted to such house during the preceding day or night, and schedules are provided for that purpose by the sanitary authority. The keeper of a common lodging-house is bound to give notice of the occurrence of any case of fever or other infectious disease in his house. The sanitary authority may, by notice in writing, require a common lodging-house to be furnished with a proper water supply, and if such notice is not complied with, the sanitary authority may annul the registration. It will be the duty of the sanitary sub-officer to see that these statutory requirements as well as those contained in the by-laws are complied with, and for that purpose he has a right of entry at all times as already mentioned.

As regards by-laws in general, the Local Government Board in England have issued model by-laws, but this example has not been as yet followed in Ireland. The sanitary sub-officer must, therefore, on appointment study the by-laws, if any, in force in his district.

The sanitary sub-officer may be directed by his sanitary authority to superintend and see to the erection of any works which may be undertaken under their direction for the suppression or removal of any nuisance within the district. Though these works would be of a minor character, the more important undertakings being carried out under the supervision of the town surveyor, still this duty necessitates a general knowledge of the principles of ventilation, heating, lighting, construction of houses, drains, water supply, &c., all which subjects have been dealt dealt with in this course of lectures.

Certain duties have been imposed upon the sanitary sub-officer under Acts passed subsequent to the Public Health (Ireland) Act, 1887.

Under Section 4 of the Factory and Workshops Act, 1878, the factory inspector can take the sanitary sub-officer of the district to accompany him in his inspection of the factories and workshops in his district.

Under Section 3 of the Sale of Food and Drugs Amendment Act, 1879, a sample of milk may be obtained at the place of delivery in the course of delivery, and submitted to be analysed; and Section 4 imposes a penalty not exceeding £10 on any person refusing to give a sample of milk for analysis. Section 8 empowers the officer to seize any article of food in any street or place of public resort for the purpose of being analysed.

The Factory and Workshops Amendment Act of 1891 repeals certain provisions in the principal Act of 1878 so far as it applies to the sanitary condition of workshops. The third section of this Act transfers all powers of entry, inspection, taking of legal proceedings or otherwise, hitherto exercised by the special factory inspector, under the principal Act, to the sanitary authority of the district and their officers. The medical officer of health, if he becomes aware of the employment of any child, young person, or woman in any workshop, shall give notice to the inspector of factories of the district. No doubt under this provision it would be the duty of the sanitary sub-officer to inform the medical officer of health of any infringement of the regulations in this respect. The sanitary authority is bound to see that these workshops are kept free from any effluvia arising from any drain, privy, water-closet, or other nuisance, and unless such workhouse is so kept it shall be deemed a nuisance liable to be summarily dealt with under the Public Health Act. When the sanitary sub-officer or medical officer of health gives a certificate that lime washing, cleansing, or purifying is necessary for the health of the persons employed in such workshop, the sanitary officer

shall give notice in writing to the owner or occupier of such workshop to perform the necessary work, and if the owner or occupier to whom such notice has been given fails to perform the work within the time specified in the notice he shall be liable to a penalty not exceeding 10s. a day until such work is carried out, and the sanitary authority may cause the work to be done themselves and recover the expense of same in a summary manner.

One class of workshops, retail bakehouses, is specially taken out of the control of the Inspector of Factories and Workshops, and is placed under the supervision of the sanitary authority. With regard to such bakehouses the sanitary sub-officer exercises the functions of the Inspector of Factories and Workshops. The principal regulations affecting bakehouses are that no water-closet, earth-closet, privy, or ashpit, shall be within, or communicate with, the bakehouse. Any cistern for supplying water to the bakehouse shall be separate and distinct from any cistern for supplying water to a water-closet. No drain for carrying off fæcal or sewage matter shall have an opening within the bakehouse. Bakehouses in towns of more than 5,000 inhabitants shall be kept properly painted, varnished, or limewashed. If the latter it must be repeated every six months. In towns of more than 5,000 inhabitants, no part of a bakehouse shall be used as a sleeping place unless it is effectually separated from the bakehouse by a partition extending from floor to ceiling; such sleeping place to be furnished with a window of at least nine superficial feet in area, half of which must be made to open.

The laws intended to prevent the spread of infectious diseases, necessarily throw a good deal of work upon the sanitary sub-officer, who will be generally selected to see to the proper carrying out of these regulations.

The 5th section of the Infectious Diseases (Prevention) Act of 1890, where the Act is adopted, substitutes other provisions as to the disinfection of houses, rooms, clothing, &c., for those of the 137th section of the Public Health Act. Under this section, where the medical officer of health, or any other qualified medical practitioner, certifies that such disinfection is necessary, the clerk of the sanitary authority shall give notice in writing to the owner or occupier of such house, or part thereof, requiring the disinfection to be carried out, and, if the person to whom such notice is given does not inform the sanitary authority that he will comply with the notice, or if, having so informed the sanitary authority, he fails to have the disinfection carried out within the time fixed, the house or part thereof, and such infectious articles shall be cleansed and disinfected by the officers of the sanitary authority under the superintendence of the medical officer of health, and the expense incurred may be recovered from the owner or occupier. If the owner or occupier is unable, in the opinion of the sanitary authority or medical officer of health, effectually to cleanse and disinfect such house or part thereof, and

any infected article therein, the disinfection may be carried out by the sanitary authority at its own expense. Under Section 6, the infected articles can be removed for the purpose of being disinfected on notice by the sanitary authority, or the medical officer of health, generally empowered to give such notice, and such articles are to be delivered over to any officer of the the sanitary authority, and if any unnecessary damage is done to such articles, the owner must be compensated by the sanitary authority. It is ordered by Section 16 that, when the body of a person dying from any infectious disease is retained in a room, other than a mortuary or a room not used as a sleeping place, dwelling place, or workroom, for more than forty-eight hours after death, without the sanction of the medical officer of health or registered medical practitioner, such body may be removed by an order of any justice on application by the medical officer of health, and it directs the same to be buried within the time limited in the order. Section 13 forbids the casting of any infected rubbish into an ashpit or other receptacle. Where this last section, or Section 11, forbidding the conveyance of bodies of persons dying of infectious diseases in public conveyances other than hearses, is in force, the sanitary authority must give notice of these provisions to the inhabitants of any house in which there is a person suffering from any infectious disease.

Under Section 15, when the process of disinfection prevents the occupation of the house, the sanitary authority is obliged to provide accommodation for the members of the family so displaced. Section 16 enacts that any person obstructing any duly authorised officer in carrying out the provisions of the Act shall be liable to a penalty not exceeding £5, and if the offence is a continuous one, to a penalty not exceeding 40s. a day. Section 17 gives any officer appointed for the carrying out of the provisions of the Act, on production of his authority in writing, power to enter on any premises between ten in the forenoon and six in the afternoon.

A most important part of the sanitary sub-officer's business is the keeping of a sufficient record of his work. In Ireland there are no books specified to be kept by him, but in England his duties in this respect are definitely laid down. In Ireland the officer, however, under the 8th paragraph of the Local Government Board Order already referred to, is bound to "keep such books and records, applicable to his office, as the sanitary authority may provide and direct him to keep."

The officer should be provided by the sanitary authority with copies of all Acts of Parliament, orders and memoranda of the Local Government Board, by-laws of the sanitary authority, and books of forms required for notices under the various Sanitary Acts and orders. He will obviously require to have always about him when making his rounds of inspection his note-book and measuring tape.

In conclusion, I should say a few words on the subject of nuisances from the standpoint of the sanitarian. The action of the public health officers towards the abatement of nuisances generally depends upon—1st. The common law. 2nd. The powers under statute conferred on the courts of summary jurisdiction in certain cases. And 3rd. The limited powers of independent action to which I have already referred. The nuisances to be abated consist of accumulations of matter giving off effluvia, or trade processes producing effluvia. The word "effluvium" simply means something given off. When this is offensive it is commonly called a stink; or it may not affect the organs of smell and yet be an effluvium. It would be an error to suppose that the worst smells are necessarily the most dangerous to health. There is no question that bad smells are legal nuisances, whether they can be proved to be injurious to health or not. Effluvia which cannot be proved to be injurious to the health of the strong may very seriously injure the weak. Dr. Ballard classifies effluvium nuisances as follows:—

(1). Keeping of animals.

(2). Slaughtering of animals.

(3). Other branches of industry in which animal matters or substances of animal origin are principally dealt with.

(4). Branches of industry in which vegetable matters are principally dealt with.

(5). Branches of industry in which mineral substances are principally dealt with.

(6). Branches of mixed origin in which mineral, vegetable, and animal substances are dealt with.

This is in effect a classification of trade nuisances. The Public Health Act makes the distinction between noxious and offensive trades, the noxious being those injurious to health, and the offensive those causing anger, disgusting, disagreeable. In dealing with trade nuisances, a check is placed on them by requiring the permission of the sanitary authority for the establishment of any new business—that is, a business established subsequent to the passing of the Public Health Act of 1878—and the further requirement that in all cases the best means to prevent the emission of noxious or offensive effluvia shall be adopted. The sanitary authority must, in cases of trade nuisances obtain an order to abate from a court of summary jurisdiction in the first instance. Although the special provisions of the Public Health Act referring to nuisances from noxious or offensive trades apply only to urban sanitary districts, yet such trades carried on in a rural sanitary district so as to become a nuisance or dangerous to health can be dealt with under the ordinary processes for the abatement of nuisances under the Act.

Although Section 129 of the Public Health Act empowers, if it does not direct, the sanitary authority to make by-laws with respect to

offensive trades; yet, as far as I can gather, no such by-laws have been made in Ireland, and where trades are carried on so as to become a nuisance, they are proceeded against under the 107th Section of the Act. The most commonly occurring offensive trades are those mentioned in the 128th section of the Act, viz.—blood boiler, bone boiler, fell-monger, soap boiler, tallow melter, tripe boiler, and any other noxious or offensive trade, business, or manufacture; and amongst these may be mentioned the keeping of animals. All these trade nuisances depend upon the effluvia given off. There are special means to be adopted in each with the object of preventing, as much as possible, the production of effluvia; and, secondly, counteracting them when given off. In all trades dealing with large quantities of animal matter, such as those enumerated, the storage of the material should be rendered as little offensive as possible. The floor of workshops where processes dealing with such matters are carried on, should be formed of some smooth impervious material, so as to admit of frequent washing, for which purpose an ample water supply should be provided. The walls of such places should be kept very clean and faced for six feet in height with a similar smooth, impervious material, with the like object in view, and any other portion of the walls and ceilings should be limewashed at least twice a year.

Ventilation in these, as well as in all similar cases, shall be strictly attended to. All animal products, such as blood, should be conveyed to the manufactory in properly constructed, closed vessels. As most of these trades are necessarily offensive, special means are to be adopted to get rid, as far as possible, of the effluvia produced in the manufacture. For instance, in trades involving the melting of fats, the offensive vapours can be burned so as to be rendered innoxious, or the fats may be melted by steam or in steam jacketed pans. In other instances the fumes are made to pass through the furnace, by which the offensive vapours are decomposed. In urban sanitary districts the keeping of animals will require a great deal of attention from the sanitary sub-officer. As before mentioned, the keeping of cows is looked after by the dairy inspector, but the keeping of horses and pigs is a frequent source of nuisance. The floors of stables should be of some impervious material, so as to prevent the soakage of urine, and should be well drained. Dwelling-rooms over stables, although unfortunately common, from a sanitary point of view are highly objectionable. It would be very desirable if the floors of such rooms were made impervious to the ammoniacal vapours from the stable; but I have never heard of any by-law to this effect. With regard to the ancient and highly objectionable practice of keeping pigs in towns, it is to be regretted that it should be permitted under any conditions. The excreta of the pig are offensive in the highest degree, and where permitted at all the sty should be at least

60 feet from any dwelling-house, a provision which ought to be in any set of by-laws. To keep these animals in such a manner as to prevent a nuisance involves the daily cleansing of the stys, which would require an amount of supervision on the part of the sanitary sub-officer which in most cases would be simply impossible. I have now, as far as time will permit, given what can only be a sketch of the important duties of the sanitary sub-officer. On him rests, in a great measure, the carrying out of the laws to safeguard the public health. The principle underlying all these laws is cleanliness, and the enforcement of cleanliness is his chief duty. His influence in this direction will depend much on his knowledge, and greatly more on firmness and kindness of manner, especially in dealing with the poor and the ignorant.

The Present State of the Medical Profession in Australia, Tasmania, and New Zealand.[a] By LUDWIG BRUCK, Editor of "The Australasian Medical Directory and Handbook."

ALL that has hitherto been said or written on this subject has been mere guess work, or based upon the official medical registers issued annually in the various colonies, which, however, are notoriously incorrect, for the principal reason that a very large number of medical men are registered in several colonies, and remain on the different registers whether they reside in the respective colony or not. If we take, for example, the New South Wales Register, issued in January of this year, we find that there are the names of 1,066 practitioners on the roll, of whom not less than 342 have left the colony and now reside in other portions of Australasia, or in other parts of the world; this is irrespective of nine persons included in this list who have died, one of them having been dead for nearly 17 years. The Medical Board of Victoria endeavoured to rectify this anomaly to some degree by removing from the roll in 1891 the names of 176 practitioners who failed to communicate their addresses to the Secretary; and on the New Zealand Register all those who do not reside within its territory have the notification "Left the colony" printed after their names.

This paper is based on the third edition of my "Australasian Medical Directory and Handbook," published in September last, which contains in alphabetical order only those practitioners who then resided in the Australasian colonies, or who, though at the time absent in Europe or America, intended to return to the colonies. As is well known, the

[a] Reprinted from "The Australasian Medical Gazette" for March, 1893. [The subject of Mr. Bruck's paper is of such vital interest to the Medical Profession at home that we make no apology to our readers for re-printing it at length.—EDITOR D. J. M. S.]

changes of the profession in Australasia are very rapid, and some of the statistics quoted in this paper may not be quite correct at the present date; however, it is a true picture of the state of matters medical in the Australasian colonies as it presented itself in September, 1892. As to the commentary notes in this paper, it will readily be admitted that my uninterrupted and intimate connection with the medical profession in Australasia for the last twenty years entitles me to speak with authority on all matters pertaining to this subject.

The total number of registered practitioners recorded in my Directory, excluding Fiji and other South Sea Islands, is 2,410, of whom 691 resided in New South Wales, 204 in Queensland, 181 in South Australia, 812 in Victoria, and 40 in Western Australia, or a total of 1,928 on the Australian Continent; in Tasmania there were 93 practitioners, and in New Zealand 389, or a total of 2,410 throughout Australasia.

Of these 2,410 practitioners there were 171 who had no fixed abode; that is to say they were either travelling as medical referees to the various Life Assurance Companies, were absent on a visit to the old country, were doing *locum tenens* work, or were "waiting for something to turn up." Not less than 84 of these, or almost one-half of the total number of unsettled practitioners, are found in New South Wales, principally due to the fact that New South Wales is the colony in which the travelling medical referee system is most extensively carried on; even in dull times there are never less than 40 medical men travelling all over the colony, while in Victoria, which is more densely populated in proportion to its limited area, local practitioners are generally employed by the travelling agents for the examination of candidates for life assurance, and consequently we find only 43 unsettled practitioners in that colony; Queensland has 17 of these birds of passage, South Australia 7, Western Australia 1, Tasmania 5, and New Zealand 14.

Of the 2,410 practitioners in Australasia there are 291, or 12·07 per cent., who have graduated at Colonial Universities, viz., 222 at the Medical School of the University of Melbourne (opened in 1862), 47 at that of Sydney (opened in 1883), nine at the one in Adelaide (opened in 1885), and 13 at the University of Otago, N.Z. Those practitioners who have taken colonial degrees *ad eundem gradum* are, of course, not included. It must be assumed that these 291 colonial graduates are almost entirely natives of these colonies, and as there are quite as many Australians and New Zealanders who have pursued their studies in the old country and taken their degrees at some University in Great Britain, it follows that fully 25 per cent. of all colonial practitioners must be natives of Australia and New Zealand. There are nine ladies amongst the legally qualified practitioners, viz., five in Victoria, two in New South Wales, one in Queensland, and one in South Australia, four of them being the possessors of Australian degrees.

In proportion to the population we find that in New South Wales there is one medical practitioner to every 1,708 persons; in Queensland one to every 2,034; in South Australia one to every 1,796; in Victoria one to every 1,441; in Western Australia one to every 1,375; and on the whole Australian Continent one to every 1,631 persons; in Tasmania there is one to every 1,666, in New Zealand one to every 1,799, and throughout Australasia one practitioner to every 1,660 persons. We must, however, not overlook the fact that there are a very considerable number of persons, many of whom have had no medical training whatsoever, who practise medicine for gain in these colonies. In New South Wales alone, which has been styled "The Paradise of Quacks," we have upwards of 200 of such persons, or one to three in proportion to registered medical men in active practice. Melbourne and suburbs can boast of 14 so-called "Chinese doctors," who reside within the boundaries of "Greater Melbourne." These irregular medical practitioners of all nationalities are found in every part of Australia, though nowhere in such astonishing numbers as in New South Wales.

It must also be borne in mind that the majority of the chemists in these colonies attend to slight ailments and prescribe over the counter, many going even so far as to visit patients in their own homes; they also re-dispense the doctor's prescriptions without his knowledge, and in other ways make use of them for their sole benefit, consequently medical men, especially those residing in country towns, are compelled, in self-defence, to keep a supply of drugs and dispense their own medicines.

The proportion of medical men in Queensland to its population appears rather small, but that colony has such an immense area, and the population is so scattered, that many districts cannot support a resident medical practitioner; and the same remark holds good as regards South Australia, while in New Zealand the extreme salubrity of its climate accounts for the proportionately small number of medical practitioners, some districts being so healthy as to make medical practice unremunerative, only accidents and obstetric cases requiring medical aid. In Western Australia the Government subsidises medical men in out-lying districts, which otherwise would have to remain without a resident medical practitioner, by appointing them to non-medical positions such as Resident Magistrates, Registrars, and other positions, in addition to that of District Medical Officer, at aggregate salaries varying from £100 to £400 per annum, which accounts for the apparent overcrowding of the profession in that colony in comparison with the other provinces, excepting Victoria, the smallest and most densely populated colony in Australia, where all unregistered persons using the designation of doctor, surgeon, physician, or any other title that may be construed to mean that they are legally qualified, are rigorously prosecuted, consequently the number of quacks

in that colony is considerably smaller, and the number of registered practitioners proportionately larger.

I now take the capital cities of Australasia: Sydney proper has 139 medical men, or one to every 809 inhabitants; her suburbs support 112 medical men, or one to every 2,567 inhabitants, and the metropolis as a whole has 251 practitioners, or one to every 1,594 persons. Brisbane has 42 practitioners, or one to every 1,335 persons; its suburbs 18 medical men, or one to every 2,088 persons; and Brisbane with suburbs combined, 60 medical men, or one to every 1,561 persons. Adelaide has 43 medical men, or one to every 889 inhabitants; the suburbs 40, or one to 2,250 persons; and Adelaide with suburbs, 83 practitioners, or one to every 1,546 inhabitants. Melbourne has 110 medical men, or one to 659 persons; the suburbs 180, or one to every 2,375 persons; and Greater Melbourne 290 medical men, or one to every 1,724 inhabitants. Perth, the capital city of Western Australia, has 12 practitioners, or one to every 708 of its inhabitants. Hobart, the capital of Tasmania, has 29 practitioners, or one to every 1,172 persons, and Launceston, the principal city in the north of the little island, has 13 medical men, or one to 1,692 persons. Wellington, the capital of New Zealand, supports 30 medical men, or one to every 1,133 persons, and Auckland, the former capital, has 40 practitioners, or one to every 1,300 inhabitants. Other chief towns in the South Island are Christchurch, which can boast of 29 practitioners, or one to 1,655 persons; Dunedin with 33 medical men, or one to 1,394 persons, and Nelson, with one practitioner to every 831 persons; and in the North Island there is also Napier, with one to every 933 inhabitants. As regards other principal towns in Australia, we have in Victoria the important cities of Ballarat (with Ballarat East), with one medical man to every 2,000 inhabitants, Bendigo with one practitioner to every 1,588 persons, and Geelong with one medical man to every 1,600 persons. In South Australia there is Port Pirie, which had one practitioner to every 2,025 inhabitants, In Queensland I name Rockhampton, with one practitioner to every 1,958 inhabitants, Townsville with one practitioner to every 1,633 persons, Toowoomba with one practitioner to every 881 persons, and Charters Towers with one to every 581 inhabitants. In New South Wales there is Broken Hill with one to every 2,182 persons, Goulburn with one to every 1,571 persons, Bathurst with one to every 1,321 persons, Maitland (East and West) with one to every 1,312 persons, and Newcastle with one practitioner to every 929 persons. It will be noticed that the capital cities of Australia, in comparison with their suburbs, have three times as many practitioners in proportion to their population, which is due to various reasons; firstly, there are a a number of specialists, and persons holding official positions in connection with the colonial and municipal governments, metropolitan hospitals, and

Life Assurance Companies, who have to reside in the capital cities; then a number of the city practitioners have their patients in the suburbs, but prefer to reside in the cities to be easily accessible to the large number of country patients who constantly flock to the metropolis to obtain medical advice, or a second opinion in addition to that of their local doctor, or to undergo some operation; thirdly, a large proportion of the population of the suburbs belong to Friendly Societies, the members of which include many well-to-do people, such as shopkeepers, manufacturers, members of Parliament, officials, and others, who joined the lodges when they were in more straightened circumstances; and this, of course, restricts independent practice very considerably. For example, an important suburb of Sydney on the western shores of Darling Harbour, with a population of 24,000, has only eight practitioners in active practice, or one to every 3,000 persons, but then two-thirds of the total population belong to Friendly Societies; the Friendly Societies' Dispensary in that suburb alone has over 2,300 members, consisting, with their wives and children, of fully 10,000 persons, which are attended to by two medical men who divide £600 per annum, equal to 1s. 2½d. per head a year, for which magnificent sum the two medical officers have not only to attend them in sickness and accident, but they also have to perform minor operations, administer chloroform, and extract teeth.

Another lodge in the same suburb, with about 500 members, pays 15s. per member a year to their medical officer, who, however, is not allowed to charge the usual extra fee of one guinea for midwifery cases, as these have to be attended to free of charge! This state of affairs exists all over Australasia, though not to such an unjustifiable extent, but even in sparsely populated Western Australia there are lodges, the medical officers of which are giving medical attendance *and supplying medicines* to members and their families at the rate of £1 per annum. The usual remuneration of club doctors in the large towns varies from 12s. 6d. to £1 per member a year, for which amount the member's family has also, of course, to be attended to. In the smaller country towns the remuneration, as a rule, is 26s. per member a year, which includes medicines, bottles, and teeth extracting, and when the medicines are to be renewed the medical attendant has almost invariably to supply fresh bottles, which form a considerable item in the expenditure of a country lodge doctor; obstetric cases, as a rule, are extra, and the usual club fee for them is one guinea, which includes the after attendance. And yet, when such an undesirable and dependent position is advertised there is no lack of applicants. Quite recently, when tenders were invited for attending the exacting members of three clubs in a town 70 miles from Sydney, there were not less than 42 applicants, and 22 tenders were actually sent in, some of the tenderers, cap in hand, personally soliciting the support of members of the committee, who in country towns generally consist of

storekeepers, publicans, butchers, blacksmiths, and other trades people; the previous medical attendant of these very lodges found that, after deducting the cost of medicines and bottles supplied, he received 1s. 10d. for every consultation or visit within 10 miles, including mileage, during his last twelve months.

On looking over the statistics of the principal towns a striking contrast will be noticed in the number of practitioners in proportion to their population, some of the towns having two, three, and four times as many practitioners as others. However, it must not be taken for granted that there are necessarily remunerative openings for medical practitioners in the latter towns. There are certainly towns, surrounded by a populated and flourishing district, well able to support a larger number of practitioners than other towns; but the discrepancy in most cases is a sure indication that that pernicious club system, which so greatly reduces the chances of medical men to practise their profession for a living, is more developed in such towns, though climatic conditions have also something to do with it, as even medical men are satisfied with a smaller income if they can live in towns with a fine climate like Toowoomba, Bathurst, Goulburn, and Ballarat, or in a dry and exhilarating atmosphere like that of Charters Towers and Bendigo, than spend their best years in towns with a moist and enervating climate like Rockhampton or Townsville, or in a dust-laden atmosphere like that of Broken Hill.

The club system in Australia, and the unenviable life in most of the bush towns, which induce many practitioners to indulge to excess in alcohol and narcotics, are largely answerable for the appalling death-rate amongst medical men in these colonies. The yearly average number of medical practitioners throughout Australasia during the last six years is 2,100, and the average number of deaths during the same period is 56 per annum, or 26·67 per 1,000, while the yearly average general death-rate in the Australasian colonies varies from 10 in New Zealand to 16 in Victoria per 1,000 of the mean population, and throughout Australasia it is between 13 and 14 per 1,000, or just about one-half of the death-rate amongst medical men.

I was able to ascertain the ages of 312 of those practitioners who died during the last six years, and I find that—

44	(or 14·1 per cent.)	died	at the age of	from	21 to 30	years.
72	,, 23·4	,,	,,	,,	31 to 40	,,
59	,, 18·7	,,	,,	,,	41 to 50	,,
47	,, 15·2	,,	,,	,,	51 to 60	,,
40	,, 12·8	,,	,,	,,	61 to 70	,,
37	,, 11·6	,,	,,	,,	71 to 80	,,
12	,, 3·9	,,	,,	,,	81 to 90	,,
1	,, 0·3	,,	,,	,,	91 to 100	,,

It will be seen that almost one-fourth of all deceased practitioners died from 31 to 40 years of age, or fully a fourth if I include those who died at the age of 30 years, and a total of 116, or 37·5 per cent., who died under 40 years of age.

As regards the incomes of medical men in Australasia a wrong impression exists in the minds of the public, who imagine that every medical man makes a fortune. The majority of medical practitioners in active practice make from £350 to £1,200 a year, though a considerable number, perhaps 7 per cent. or about 170 practitioners throughout Australasia, make from £1,200 to £2,000, 2 per cent., or about 48 practitioners from £2,000 to £4,000, and a very few from £4,000 to £6,000 a year. In former years, when times were better and competition less keen, some made from £6,000 to £10,000 a year, but at the present time there is, in my opinion, not one single practitioner who takes more than £6,000. The average yearly income is probably between £700 and £800 a year, which is not out of the way, considering that the rents and wages are considerably higher in the colonies, not taking into consideration the loss of many advantages, social and otherwise, enjoyed in the more civilised regions of Europe and America. Of course the incomes here referred to are the actual *cash* returns, as with few exceptions a medical man in the colonies receives payment for only two-thirds, or at the outside three-fourths, of the work performed by him.

The subjoined comparative table shows at a glance the various colonies and some of their principal towns, their estimated population, the number of resident medical practitioners, and the proportion of medical practitioners to the population:—

—	Area in Square Miles	Estimated Population on Sept. 1, 1892	Number of Resident Registered Practitioners on Sept. 1, 1892	One Practitioner to No. of Population
New South Wales	310,938	1,180,000	691	1,708
Queensland	668,497	415,000	204	2,034
South Australia	903,690	325,000	181	1,796
Victoria	87,884	1,170,000	812	1,441
Western Australia	1,060,000	55,000	40	1,375
AUSTRALIA	3,031,009	3,145,000	1,928	1,631
Tasmania	24,330	155,000	93	1,666
New Zealand	104,403	700,000*	389	1,799
AUSTRALASIA	3,159,742	4,000,000	2,410	1,660

* Including about 41,500 Maoris.

—	Estimated Population on Sept. 1, 1892	Number of Resident Registered Practitioners on Sept. 1, 1892	One Practitioner to No. of Population
Sydney, N.S.W.	112,500	139	809
Suburbs of Sydney	287,500	112	2,567
Sydney with suburbs	400,000	251	1,594
Newcastle, N.S.W.	13,000	14	929
Broken Hill, N.S.W.	24,000	11	2,182
Maitland, N.S.W.	10,500	8	1,312
Bathurst, N.S.W.	9,250	7	1,321
Goulburn, N.S.W.	11,000	7	1,571
Brisbane, Q.	56,075	42	1,335
Suburbs of Brisbane	37,582	18	2,088
Brisbane with suburbs	93,657	60	1,561
Toowoomba, Q.	7,050	8	881
Charters Towers, Q.	4,650	8	581
Rockhampton, Q.	11,750	6	1,958
Townsville, Q.	8,600	6	1,633
Adelaide, S.A.	38,240	43	889
Suburbs of Adelaide	90,000†	40	2,250
Adelaide with suburbs	128,240	83	1,546
Port Pirie	4,050	2	2,025
Melbourne, Vic.	72,500	110	659
Suburbs of Melbourne	427,500	180	2,375
Melbourne with suburbs	500,000	290	1,724
Ballarat, Vic.	42,000	21	2,000
Bendigo, Vic.	27,000	17	1,588
Geelong, Vic.	24,000	15	1,600
Perth, W.A.	8,500	12	708
Hobart with suburbs, Tas.	34,000	29	1,172
Launceston with suburbs, Tas.	22,000	13	1,692
Auckland with suburbs, N.Z.	52,000	40	1,300
Christchurch with suburbs, N.Z.	48,000	29	1,655
Dunedin with suburbs, N.Z.	46,000	33	1,394
Wellington with suburbs, N.Z.	34,000	30	1,133
Napier, N.Z.	8,400	9	933
Nelson, N.Z.	6,650	8	831

† Approximately.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—GEORGE H. KIDD, M.D., F.R.C.S.I.
General Secretary—W. THOMSON, F.R.C.S.I.

SECTION OF OBSTETRICS.

President—ANDREW J. HORNE, F.R.C.P.I.
Sectional Secretary—F. W. KIDD, M.D.

Friday, April 21, 1893.

THE PRESIDENT in the Chair.

Death of Prof. Roe—Vote of Condolence.

DR. T. MORE MADDEN proposed and DR. LANE seconded a resolution expressing the deep sympathy of the members of the Obstetrical Section with the widow and family of the late Professor Roe in their bereavement.

Specimens.

In the absence of DR. SMYLY, DR. HASTINGS TWEEDY showed for him: (1) a specimen of a uterus infiltrated by sarcoma, which was removed by Dr. Smyly from an unmarried woman aged fifty-six, on the 17th March, 1893. The case was diagnosticated and sent into the Rotunda by Dr. Atthill. The uterus was removed by the usual supra-vaginal hysterectomy in the space of forty minutes. Great difficulty was experienced in getting at the organ in consequence of a very contracted and senile vagina, this latter complication necessitating lateral incisions of the vulva. The patient left the hospital cured in three weeks. (2) Right ovary and tube and vermiform appendix removed by Dr. Smyly on the 3rd April last from an unmarried woman aged twenty-eight. She had suffered for three years from constant pain, and had had three dangerous attacks of peritonitis in that time, the last five weeks ago. Suppuration occurred during the first attack, and the abscess was opened through the vagina. Dr. Smyly's diagnosis before operation was that the patient was suffering from either a pyo-salpinx or appendicitis. The abdomen having being opened by a median incision it then became apparent that both pathological conditions were present. The tube, ovary and appendix were removed, and the patient has made an uninterrupted convalescence. (3) Ovaries and tubes removed from a married lady aged thirty-seven, who came to Dr. Smyly from New Zealand last year to be cured of a 'ere and persistent pain in the right side. A cystic ovary on the right

side and a myoma of the uterus was diagnosticated; the patient was accordingly advised to undergo an operation. On the 4th March, 1893, Dr. Smyly removed both ovaries and tubes, the patient making an uninterrupted recovery.

Dr. Lane said that the second specimen was rather interesting to him because the patient was originally with him and he opened the abscess alluded to. The patient was sent into Steeven's Hospital, and he found that there was a large tumour on the right side, reaching up to the umbilicus, with great tenderness and a very fœtid leucorrheal discharge. The abscess pointed in the right labium, and he removed about twenty ounces of pus from it. As the girl had no signs or symptoms of gonorrhœa he would like to know if any conclusion had been come to as to the cause of the pyo-salpinx.

Dr. Parsons asked as to the condition of the vermiform appendix.

Dr. Tweedy, in reply, said that the only reason he could give as to the inflammation was, that a sound was passed into her uterus some months previously by some other practitioner.

In answer to Dr. Parsons he said there was nothing found in the vermiform appendix, and they supposed that the inflammation spread from the tube to it. The latter was doubled on itself and matted down by dense adhesions.

The Removal of the Gravid Uterus by Abdominal Section.

Dr. More Madden read a paper on this subject. [It will be found in Vol. XCV., p. 386.]

Dr. Lane would like to know could Dr. More Madden assign any cause for this rapid growth in what would appear to be a monster fibroma.

Dr. Tweedy asked if he had any reason to believe that the disease was confined to the uterus, and had nót spread to the surrounding tissues. He did not see the necessity of washing out the abdominal cavity if nothing had got into it. If the blood has ceased, and if the clots have been taken away and asepsis assured, he did not see the use of a drainage-tube; it often ended in a fæcal fistula.

The President said that Dr. More Madden appeared to think, from the constitutional symptoms present, that it was a case of malignancy. But then the woman was only thirty-three years of age, and there was no matting of the tissues, no disease of the cervix uteri. Another remarkable coincidence was the absence of ascites. The late Dr. Stokes always laid down that in such cases ascites was a sign of malignancy. The difficulty, to his mind, was how to account for the sloughing of the tumour. He thought that they must bow to the pathologists and agree with them that it was a large fibroid of the uterus. With regard to the choice of operation, he would be more inclined to the ideal operation—

i.e., removal of the uterus complete. He did not see the advantage of the drainage-tube.

Dr. More Madden, in reply to Dr. Lane as to the nature of the tumour, said that he (Dr. Madden) bowed entirely to the decision of the pathologist to the hospital, Dr. M'Weeney, but, at the same time, he ventured to think that before abdominal section any man might be justified, from all the symptoms—the extremely rapid growth, the constitutional cachexia and incessant local pain—in diagnosticating it as malignant. As to washing out the peritoneal cavity, he must say that when the operator's hands, and possibly the hands of the assistant, have been introduced into the peritoneal cavity, he very much preferred washing out the cavity, because no amount of washing of hands can possibly prevent the risk of septic infection. He was not aware of any means of sterilising the atmosphere in the operating room, and therefore he thought washing out a wise precaution, and he would always continue to do it. He did not like the drainage-tube much, but in a large operation such as this one, and where there was the slightest danger of septic contamination, he thought they could not take too many precautions. They could also, if that should subsequently become necessary, wash out the peritoneal cavity through the tube.

Notes on a Case of Purpura in the Newly Born.

Dr. J. H. Glenn: The following notes of a case of hæmorrhagic spots on the skin (of marked degree) may prove interesting:—

The mother was a primipara of twenty-two, had suffered from epistaxis several times during her pregnancy, and was in fairly good health though delicate looking. She had no history of syphilis as far as could be ascertained. The baby was born on Wednesday, April 12, and was asphyxiated, but came round after Schultzing for half an hour and the administration of oxygen by Mr. Foy's apparatus, but lived only thirty-six hours. The child was covered over with discrete hæmorrhagic spots, especially the face, chest and back. It weighed 4½ lbs., and measured 17 inches in length. On auscultating we found a loud bruit most intense over the tricuspid area.

Dr. Earl kindly made the *post-mortem* examination and reported—

1. The spleen was very much enlarged and of a deep red colour, being firm to the touch. There was considerable perisplenitis, weight 45 grammes—the spleen of a normal newly-born child weighs 6 grammes. There was no ascites. The liver was slightly enlarged, deeply stained with bile; it was also firm to the touch, while the healthy liver should be soft. The condition of the spleen and liver points strongly to congenital syphilis.

With the exception of a few hæmorrhages on the surface the kidneys were normal.

The stomach and intestines were covered with purpuric spots similar to those on the skin. Both visceral and parietal layers of the pleura were studded with minute hæmorrhages.

There were hæmorrhages of considerable size in the substance of the lung; the pericardium was also studded over with hæmorrhages.

The foramen ovale was open and allowed passage of blood from the left to the right auricle.

The auricular surface of the tricuspid valve was studded with minute vegetations of a bright red colour; the left ventricle was normal, as were also the large vessels. The œsophagus and mouth were also covered over with hæmorrhagic spots. The bones, as far as could be observed, were normal.

The Section then adjourned.

SECTION OF PATHOLOGY.

President—C. J. Nixon, M.D.

Sectional Secretary—J. B. Story, F.R.C.S.I.

Friday, May 5, 1893.

The President in the Chair.

Thrombosis of Veins of Galen.

Dr. Purser showed the brain of a young woman who became suddenly comatose and died in a few hours, when apparently convalescent from facial erysipelas. The temperature, which had been normal for two days, rose to 106° before death, and half an hour *post mortem* was 107·5°. There was thrombosis of the veins of Galen and their collateral branches. Congestion of the optic thalami and caudate nuclei, with minute hæmorrhages into the floor of the lateral ventricle, and a coagulated fibrinous exudation into the left lateral ventricle.

The President said that many cases of thrombosis of the veins of the cerebral cortex might be overlooked owing to their not being sought for. He wished to know was there any paralysis of parts supplied by nerves in relation to the cavernous sinus, as that would probably be affected in the thrombosis.

Dr. Purser replied that there was not, and he said it was remarkable that the œdema of the face was subsiding when the serious symptoms occurred. The veins of the convexity of the cerebrum were not thrombosed. In cases of cachectic thrombosis it is usually the superior longitudinal sinus which is affected.

Dr. M'Weeney wished to draw a parallel between the present case and that of phlegmasia alba dolens occurring in puerperal women. In

the latter disease the intima of the veins was diseased and abounded in micrococci. He wished to know had a microscopic examination of the veins of the cerebrum been made with a view to determine whether micrococci could be discovered in the intima.

DR. PURSER said that no microscopic examination had been made, and he remarked that even if micrococci were found it did not help to explain the absence of serious symptoms which occurred during thrombosis of the sinuses, since the symptoms did not set in till the veins of the cerebrum were affected.

DR. NIXON said that it should be remembered that cases of marantic thrombosis were by no means very uncommon, and it was well to distinguish between the two sorts of thrombosis.

DR. PURSER said he considered the analogy between the present case and that of phlegmasia alba dolens to be perfect.

Biliary Fistula.

DR. PURSER showed the viscera of a young woman, who had suffered for several years from a painful tumour in the right hypochondrium, extending to the level of the umbilicus. An exploratory laparotomy was performed in 1891, when the tumour was recognised as the liver. In October, 1892, she suffered from pleurisy and pneumonia on the right side, and shortly afterwards commenced to expectorate bile. This increased until at last all the bile was evacuated *per os*. She suffered from severe hectic fever, and was rapidly failing in strength. In March an incision was made in the sixth intercostal space and a drainage-tube was introduced into the communicating passage between the liver and the lung. By this means the bile was intercepted in its upward course and made to flow entirely through the tube. There was some temporary improvement, but the fever returned; she had vomiting and diarrhœa, and died in the last week of April. The liver was so much deformed that it was difficult to recognise its different parts. The right lobe formed a flattened, square-shaped mass, which was the tumour felt during life. Its capsule was thickened and the tissue indurated by interstitial hepatitis. The bile duct was patent, but contained two small calculi, which, however, could not have obstructed the flow of bile. The left lobe was changed into a membranous sac about two inches in transverse diameter. This communicated freely with the inferior vena cava. In fact, it formed the termination of this vessel, which was obliterated about half an inch above the right renal vein. Above and behind the right lobe of the liver there was a cavity, with partially calcified walls, large enough to contain a small apple. This lay altogether below the diaphragm. It communicated freely with the right division of the hepatic duct just as it left the liver; also through the diaphragm with the closely adherent right lung. The middle and superior lobes of the lung were

excavated into a large cavity, into which the bronchi freely opened. The opening through which the drainage-tube had passed led from the pleura through the diaphragm into the hepatic cyst. The contents of the latter were bile, mucinous matter, and several biliary concretions. The kidneys were enlarged and contained a very large number of cysts, most of which were occupied by thick colloid matter. The spleen was enlarged and indurated. The stomach presented evidence of intense catarrhal inflammation.

Dr. Nixon said that sub-diaphragmatic collections of matter were not very uncommon, and the question was, did this case commence as a sub-diaphragmatic abscess, and then did this cause the disease of the liver, or was it *vice versa*?

Peritonitis and Pleurisy caused by Streptococci.

Dr. E. J. M'Weeney read a paper upon "Peritonitis and Pleurisy caused by Streptococci."

Dr. Purser said it was easy to inject the lymphatics of the pleural surface of the diaphragm from the peritoneal aspect, and thus the spread of the micrococci from the peritoneal to the pleural cavity might be explained.

The Section then adjourned.

SECTION OF MEDICINE.

President—Walter G. Smith, M.D.; President of the Royal College of Physicians of Ireland.

Sectional Secretary—A. N. Montgomery, M.R.C.P.I.

Friday, May 19, 1893.

The President in the Chair.

A Case of Pharyngeal Spasm.

Dr. H. T. Bewley read a paper on a Case of Pharyngeal Spasm. [It will be found at page 1.]

Dr. Purser asked how long the patient had suffered from dysphagia before he died. He said he saw a somewhat similar case of an elderly gentleman, about sixty years of age, who had repeated attacks of difficulty in swallowing, and who referred the distress to the upper part of the sternum. When he visited him he had been six days without swallowing anything except very small quantities of fluid, and when the patient diverted his attention from his sufferings he could talk very well. Operative interference was discountenanced, and a good prognosis was given. In a few hours he was able to swallow without any difficulty.

The case was looked upon as one of male hysteria. The chief point of interest in Dr. Bewley's case is the sudden death. This seems to be associated rather with disease of the medulla than with difficulty in swallowing. The parts of the medulla presiding over the movements of deglutition and the respiratory and cardiac movements are closely associated, as illustrated by the experiment of holding your breath for as long as possible and then swallowing saliva, when you are able to hold your breath for a considerable time longer. The frequency of the heart's beats is also increased while in the act of drinking. In this case there may have been some disease about the origin of the pneumogastric nerve which caused, first of all, the incoordination and finally death. If the movements of respiration stopped first it would probably be a paralytic lesion, while if the heart stopped first it would have been probably an irritative lesion.

The PRESIDENT recalled a curious case which he saw in 1867. The patient, on recovering from cholera, became affected by a spasmodic affection which prevented him taking solid food. He could take only fluid food. If he took solid food he was not able to swallow it, and on one or two occasions he vomited a conical-fluted mass of casein which was lodged in the pharynx or œsophagus. At present he has under observation a lady in whom attempts to take solid food causes intense pain about the cricoid cartilage. He passed a bougie down the œsophagus under the influence of an anæsthetic, but no stricture could be felt.

DR. BEWLEY, in reply to Dr. Purser, stated that the dysphagia had lasted about five and a half days.

On the Diagnostic Value of the Diazo Reaction.

DR. W. R. DAWSON read a paper on the Diagnostic Value of the Diazo Reaction. [It will be found at Vol. XCV., p. 490.]

DR. J. W. MOORE stated that, in the autumn of 1891, through the kindness of Dr. Reynolds, he had made a series of experiments with this reaction. He brought down five specimens of urine to Dr. Reynolds' laboratory, and Dr. Reynolds himself performed the tests. Specimens Nos. 1 and 2 were from patients suffering from typhoid fever, No. 3 from a case in which the diagnosis of typhoid at the time was doubtful, and Nos. 4 and 5 were from patients who had not typhoid at all. Nos. 1, 2, and 3 gave the reaction, Nos. 4 and 5 did not. In Case No. 3 the reaction was incomplete, the case being one of recurrent typhoid fever after a lapse of 14½ years. Since then he learned not to place too much confidence in the test, although he regarded it as a valuable aid in the diagnosis of typhoid fever.

DR. PURSER said that the test occupied a curious position among urinary tests, because it is a test for something which we do not know.

The test is empirical, and so is the result. He was inclined to think it had some value in typhoid fever. If there was a case in which the diagnosis was very evenly balanced between typhoid and something else and the reaction was absent, he would be inclined to regard the case as not one of typhoid. The reaction must show a blood-red colour, and the froth must be red when the liquid is shaken up. He remembered a case which was diagnosticated typhoid for a long time, but in which the reaction could not be obtained, and the case afterwards proved to be one of acute tuberculosis. The sodium nitrite solution should be prepared fresh each time of testing, as it was very unstable.

The PRESIDENT said that the diazo compounds were very unstable, and on this account he was led to doubt the value of the test. He regarded the test principally as a scientific curiosity.

DR. DAWSON, in replying, said that he thought Dr. Purser had put the matter very plainly when he pointed out that the test was principally valuable as a negative test. The test solutions were roughly tested for efficiency by observing whether there was a nitrous smell produced when the acid was added to the sodium nitrite solution.

The section then adjourned.

BOMBAY CENSUS, 1891.

IN the third number of the *Indian Medico-Chirurgical Review* will be found a valuable abstract of the Census of the Bombay Presidency for 1891, the population of which, the so-called "Feudatory States" included, was 26,916,342. Of these 21,438,244 were Hindus, 4,355,802 Mussulmans, 167,004 Christians, 76,456 Parsecs, 10,721 Jews, 674 Buddhists. Mean ages, 23·06 years; in England, 1871, it was 26·4. The proportion of females to males was 938 to 1,000. The numbers showing proportion per 10,000 of unmarried, married, and widowed, were for males, 4,779, 4,699, 522; for females, 3,165, 5,045, 1,790. In Bombay city (population 821,764) there was one insane person to 2,075 inhabitants, one deaf-mute to 2,668, one blind to 883, one leprous to 2,227.

LONDON POST-GRADUATE COURSE.

WE have received the Prospectus for the Summer Term of the current year, which began on the 1st May. The Winter Term extends from 9th Oct. to 2nd Dec. As this is the fourth year of the experiment we may infer that it has been as successful as it deserved to be. There seems to be no reason why the example set by the profession in the United States, and followed by London, should not be followed by Dublin also. The necessary material, intellectual and other, abounds.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, May 20, 1893.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	April 29.	May 6.	May 13.	May 20.		April 29.	May 6.	May 13.	May 20.
Armagh -	28·0	49·1	56·1	21·0	Limerick -	16·8	15·4	23·9	14·0
Belfast -	27·7	23·0	23·2	22·4	Lisburn -	17·0	21·3	12·8	25·7
Cork -	22·8	24·2	26·3	33·2	Londonderry	26·7	15·7	14·1	18·8
Drogheda	35·1	26·4	22·0	22·0	Lurgan -	13·7	4·6	18·2	4·6
Dublin -	24·6	20·7	25·2	25·7	Newry -	12·1	24·1	12·1	40·2
Dundalk -	50·3	41·9	16·8	4·2	Sligo -	20·3	0·0	5·1	5·1
Galway -	7·6	0·0	11·3	22·7	Waterford -	15·0	35·0	22·5	32·5
Kilkenny	23·6	33·0	14·2	0·0	Wexford -	27·1	45·2	40·6	13·5

In the week ending Saturday, April 29, 1893, the mortality in thirty-three large English towns, including London (in which the rate was 19·0), was equal to an average annual death-rate of 19·7 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·9 per 1,000. In Glasgow the rate was 24·9, and in Edinburgh it was 15·3.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 24·7 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·7 per 1,000, the rates varying from 0·0 in eight of the districts to 16·8 in Dundalk—the 12 deaths from all causes registered in that district comprising 4 from measles. Among the 141 deaths from all causes registered in Belfast are 6 from measles,

1 from scarlatina, 3 from whooping-cough, and 1 from enteric fever. The 33 deaths in Cork comprise 2 from measles, 1 from whooping-cough, and 1 from diarrhœa; and the 6 deaths in Wexford comprise 3 from measles. The Registrar for St. Mary's District, Drogheda, remarks —"Influenza, affecting the cerebro-spinal system, is again very prevalent;" and the Registrar for Wexford District, remarks—"Measles is prevalent in all parts of the District."

In the Dublin Registration District the registered births amounted to 216—115 boys and 101 girls; and the registered deaths to 174—88 males and 86 females.

The deaths, which are 28 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·0 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 24·6 per 1,000. During the first seventeen weeks of the current year the death-rate averaged 27·7, and was 4·5 under the mean rate in the corresponding period of the ten years 1883–1892.

Only 11 deaths from zymotic diseases were registered, being 11 under the number for the preceding week, and 13 under the average for the 17th week of the last ten years. They comprise 1 from measles, 1 from influenza, 1 from whooping-cough, 2 from enteric fever, and 3 from erysipelas.

The number of cases of enteric fever admitted to hospital was 7, being 1 under the admissions for the preceding week. Sixteen enteric fever patients were discharged, and 42 remained under treatment on Saturday, being 9 below the number in hospital on Saturday, April 22.

Ten cases of scarlatina were admitted to hospital, being 2 in excess of the admissions for the preceding week; 12 patients were discharged during the week, and 64 remained under treatment on Saturday, being 2 under the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 13 cases of measles (an increase of 9 as compared with the admissions for the preceding week), and 2 of typhus: 23 cases of the former and 4 cases of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 31, being 12 below the average for the corresponding week of the last ten years, and 14 under the number for the week ended April 22. The 31 deaths comprise 17 from bronchitis and 12 from pneumonia or inflammation of the lungs.

In the week ending Saturday, May 6, the mortality in thirty-three large English towns, including London (in which the rate was 19·1), was equal to an average annual death-rate of 19·8 per 1,000 persons

living. The average rate for eight principal towns of Scotland was 21·5 per 1,000. In Glasgow the rate was 26·4, and in Edinburgh it was 16·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 22·0 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·7 per 1,000, the rates varying from 0·0 in nine of the districts to 18·1 in Wexford—the 10 deaths from all causes registered in that district comprising 4 from measles. Among the 117 deaths from all causes registered in Belfast are 5 from measles, 2 from scarlatina, 7 from whooping-cough, 1 from enteric fever, and 4 from diarrhœa. The 35 deaths in Cork comprise 1 from typhus, and 2 from enteric fever. The 10 deaths in Dundalk comprise 3 from measles. The Registrar of Wexford District remarks—"Measles continues prevalent."

In the Dublin Registration District the registered births amounted to 225—116 boys and 109 girls; and the registered deaths to 149—77 males and 72 females.

The deaths, which are 47 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 22·2 in every 1,000 of the population. Omitting the deaths (numbering 10) of persons admitted into public institutions from localities outside the district, the rate was 20·7 per 1,000. During the first eighteen weeks of the current year the death-rate averaged 27·4, and was 4·7 under the mean rate in the corresponding period of the ten years, 1883–1892.

Twenty-three deaths from zymotic diseases were registered, being 12 over the number for the preceding week and 1 above the average for the 18th week of the last ten years, and they comprise 3 from measles 1 from typhus, 1 from influenza, 6 from whooping-cough, 4 from enteric fever, 2 from dysentery, and 2 from erysipelas.

Only 4 cases of enteric fever were admitted to hospital, being 3 under the admissions for the preceding week: 7 enteric fever patients were discharged and 39 remained under treatment on Saturday, being 3 below the number in hospital on Saturday, April 29.

Nineteen cases of scarlatina were admitted to hospital, being 9 in excess of the admissions for the preceding week. Four patients were discharged during the week, and 79 remained under treatment on Saturday, being 15 over the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 15 cases of measles (an increase of 2 as compared with the admissions for the preceding week), and 2 of typhus: 28 cases of the former and 5 of the latter disease remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system, which had fallen from 45 for the week ended April 22 to 31 for the following week, further

fell this week to 24, or 18 below the average for the corresponding week of the last ten years. The 24 deaths consist of 9 from bronchitis, 13 from pneumonia or inflammation of the lungs, and 2 from pleurisy.

In the week ending Saturday, May 13, the mortality in thirty-three large English towns, including London (in which the rate was 17·7), was equal to an average annual death-rate of 18·6 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·7 per 1,000. In Glasgow the rate was 24·8, and in Edinburgh it was 15·7.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 23·4 per 1,000 of the population, based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·8 per 1,000, the rates varying from 0·0 in seven of the districts to 22·6 in Wexford—the 9 deaths from all causes registered in that district comprising 5 more from measles. Among the 118 deaths from all causes registered in Belfast are 6 from measles, 1 from scarlatina, 1 from typhus, 2 from whooping-cough, 1 from diphtheria, 1 from enteric fever, and 2 from diarrhœa. The 8 deaths in Armagh comprise 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 191—97 boys and 94 girls; and the registered deaths to 175—78 males and 97 females.

The deaths, which are 12 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·1 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted into public institutions from localities outside the district, the rate was 25·2 per 1,000. During the first nineteen weeks of the current year the death-rate averaged 27·3, and was 4·5 under the mean rate in the corresponding period of the ten years, 1883–1892.

Twenty-eight deaths from zymotic diseases were registered, being 5 over the number for the preceding week, and 8 above the average for the 19th week of the last ten years. They comprise 4 from measles, 2 from scarlet fever (scarlatina), 8 from whooping-cough, 1 from diphtheria, 2 from simple continued and ill-defined fever, 4 from enteric fever, and 1 from diarrhœa.

The number of cases of enteric fever admitted to hospital was 5, being 1 over the admissions for the preceding week: 8 enteric fever patients were discharged, 1 died, and 35 remained under treatment on Saturday, being 4 below the number in hospital on Saturday, May 6.

Only 8 cases of scarlatina were admitted to hospital, being 11 under

the admissions for the preceding week: 11 patients were discharged and 76 remained under treatment on Saturday, being 3 under the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 8 cases of measles (a decline of 7 as compared with the admissions for the preceding week), and 1 case of typhus—32 cases of the former and 5 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 31, being 7 over the number for the week ended May 6, but 6 below the average for the corresponding week of the last ten years. The 31 deaths comprise 17 from bronchitis and 11 from pneumonia or inflammation of the lungs.

In the week ending Saturday, May 20, the mortality in thirty-three large English towns, including London (in which the rate was 18·2), was equal to an average annual death-rate of 18·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·9 per 1,000. In Glasgow the rate was 26·8, and in Edinburgh it was 17·1.

The average annual death-rate in the sixteen principal town districts of Ireland was 23·6 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in twelve of the districts to 5·0 in Waterford—the 13 deaths from all causes registered in that district comprising 1 from whooping-cough and 1 from enteric fever. Among the 114 deaths from all causes registered in Belfast are 5 from measles, 3 from scarlatina, 3 from whooping-cough, 1 from enteric fever, and 5 from diarrhœa.

In the Dublin Registration District the registered births amounted to 188—100 boys and 88 girls; and the registered deaths to 179—81 males and 98 females.

The deaths, which are 1 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·7 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted into public institutions from localities outside the district, the rate was 25·7 per 1,000. During the first twenty weeks of the current year the death-rate averaged 27·3, and was 4·3 under the mean rate in the corresponding period of the ten years, 1883–1892.

The number of deaths from zymotic diseases registered was 20, being 8 under the number for the preceding week, and 3 below the average for the 20th week of the last ten years. The 20 deaths comprise 2 from measles, 1 from scarlet fever (scarlatina), 1 from typhus, 2 from influenza and its complications, 3 from whooping-cough, 1 from diph-

theria, 1 from ill-defined fever, 6 from enteric fever, and 1 from erysipelas.

Eleven cases of enteric fever were admitted to hospital, being 6 over the admissions for the preceding week: 11 enteric fever patients were discharged, 2 died, and 33 remained under treatment on Saturday, being 2 under the number in hospital on Saturday, May 13.

Thirteen cases of scarlatina were admitted to hospital, being 5 over the admissions for the preceding week: 9 patients were discharged, and 80 remained under treatment on Saturday, being 4 over the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 5 cases of measles (a decline of 3 as compared with the admissions for the preceding week), but no cases of typhus were received. Twenty cases of the former and 3 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 28, being 6 below the average for the corresponding week of the last ten years and 3 under the number for the week ended May 13. The 28 deaths comprise 12 from bronchitis, 11 from pneumonia or inflammation of the lungs, and 2 from pleurisy.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of May,* 1893.

Mean Height of Barometer, - - -	30·038 inches.
Maximal Height of Barometer (on 10th, at 9 a.m.), -	30·455 ,,
Minimal Height of Barometer (on 19th, at 4 p.m.), -	29·407 ,,
Mean Dry-bulb Temperature, - - -	55·3°.
Mean Wet-bulb Temperature, - - -	52·0°.
Mean Dew-point Temperature, - - -	49·0°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·347 inch.
Mean Humidity, - - - - -	79·9 per cent.
Highest Temperature in Shade (on 11th), - -	70·2°.
Lowest Temperature in Shade (on 31st), - -	42·8°.
Lowest Temperature on Grass (Radiation) (on 31st)	38·8°.
Mean Amount of Cloud, - - - -	62·3 per cent.
Rainfall (on 10 days), - - - -	1·666 inches.
Greatest Daily Rainfall (on 20th), - - -	·720 inch.
General Directions of Wind, - - -	E.,S.E., W.N.W.

Remarks.

Like March and April of the present year, this month was singularly fine—warm and for the most part dry. Unlike March and April, however, the amount of cloud was considerable—62·3 per cent. compared with only 49·1 per cent. in March, and only 40·0 per cent. in April. Nor was the drought at all as severe as in the two previous months. In Dublin rain fell abundantly at the beginning and in the middle of the month, the total fall being 1·666 inches, against only ·288 inch in March and 1·046 inches, in April. As regards temperature, this was a "record month," the mean being 0·9° above that for May, 1868—namely, 56·7° against 55·8°.

In Dublin the arithmetical mean temperature (56·7°) was decidedly above the average (52·0°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 55·3°. In the twenty-eight years ending with 1892, May was coldest in 1869 (M. T. = 48·2°), in 1885 (M. T. 48·7°), and in 1879 (the "cold year") (M. T. = 48·8°). It was warmest in 1868 (the "warm year") M. T. = 55·8°, and 1875 (M. T. = 54·9°). In 1886 the M. T. was 50·5°; in 1887, 51·8°; in 1888, 52·5°; in 1889, 54·6°; in 1890, 53·2°; in 1891, only 49·6°; and in 1892, 53·8°.

The mean height of the barometer was 30·038 inches, or 0·049 inch above the corrected average value for May—namely, 29·989 inches. The mercury rose to 30·455 inches at 9 a.m. of the 10th, and fell to 29·407 inches at 4 p.m. of the 19th. The observed range of atmospherical pressure was, therefore, 1·048 inches.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 55·3°, or 5·0° above the value for April, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·47), the value was 56·3°, or 4·7° above the average mean temperature for May, calculated in the same way, in the twenty-five years, 1865–89, inclusive (51·6°). The arithmetical mean of the maximal and minimal readings was 56·7°, compared with a twenty-five years' average of 52·0°. On the 11th the thermometer in the screen rose to 70·2°—wind, W.N.W.; on the 31st the temperature fell to 42·8°—wind, N.N.E. The minimum on the grass was 38·8°, also on the 31st.

The rainfall amounted to 1·666 inches, distributed over 10 days. The average rainfall for May in the twenty-five years, 1865–89, inclusive, was 2·030 inches, and the average number of rainy days was 15·4. The rainfall and the rainy days, therefore, were much below the average. In 1886 the rainfall in May was very large—5·472 inches on 21 days; in 1869 also 5·414 inches fell on 19 days. On the other hand, in 1871, only ·378 of an inch was measured on 9 days; in 1876 only ·798 of an inch fell on 6 days; in 1887 only ·882 of an inch on 10 days; and in 1888 only ·978 of an inch on 11 days. In 1890, 2·438 inches fell on

17 days. In 1891 May was the first month in which the rainfall exceeded the average. It amounted to 2·792 inches on 17 days. In 1892 the large amount of 4·177 inches fell on 19 days.

Solar halos were seen on the 6th and 10th. High winds were noted on only 4 days, never attaining the force of a gale. Thunder was heard on the 15th, 20th, and 29th. No hail, sleet, or snow fell.

During the month the thermometer did not fall below 32°, either in the screen or on the grass. The mean minimal temperature on the grass was 45·6°, compared with 41·3° in May, 1892, 37·7° in 1891, 42·2° in 1890, 42·4° in 1889, 37·5° in 1888, and 37·9° in 1887.

During the period ended Saturday, the 6th, the weather was most favourable. Rain fell in copious showers on Monday and Tuesday, the 1st and 2nd, after which came a succession of fine, dry days, with intervals of hot sunshine. On Sunday, April 30, a "hollow" of low atmospherical pressure stretched south-eastwards from Iceland to Denmark, so that N.W. winds, low temperatures, and changeable showery weather were experienced in the British Islands. During the next two days the barometer was unsteady, especially over Ireland and Scotland, in which countries rain fell pretty freely. In the South of England and the neighbourhood of London, however, the drought continued almost uninterruptedly. On Thursday a large anticyclone began to form over Norway, the North Sea, and Great Britain, and the weather became once more finer, brighter, and warmer. Over Ireland much cirriform cloud was at this time daily observed travelling in an upper air-current from S.W., while the surface wind was S.E. or E. In Dublin the air-pressure ranged from 29·778 inches, at 4 p.m. of Tuesday (wind S.W.) to 30·284 inches at 9 a.m. of Saturday (wind E.S.E.). On Monday the shade minimum was 46·1°, on Friday the shade maximum was 68·7°. Rain fell on the first two days to the amount of ·402 inch, ·323 inch being measured on Monday, the 1st. The prevalent winds were first westerly, then east-south-easterly. A solar halo was seen on Saturday forenoon.

The weather was exceedingly fine and dry throughout the week ended Saturday, the 13th—at least in England and Ireland—in Scotland refreshing rains fell on Wednesday and the two following days. At the beginning of the period a vast anticyclone stretched south-westwards from Sweden, where the barometer stood above 30·9 inches (30·95 inches at Hernosand at 8 a.m. of Sunday), across the North Sea to the British Isles. The wind was rather squally from E. and S.E. and temperature was low—night frosts occurring in parts of England as well as on the Continent. By Wednesday a great change was in progress—the barometer was falling in the N. and rising in the S., while a tongue of high pressure still stretched across England and Ireland. The change was attended by a copious rainfall in many parts of France on Tuesday; and was followed by the setting in of westerly winds over the northern half of

the British Isles, where also clouds increased and rain fell as above mentioned. After a sharp night on Wednesday, temperature rose considerably in England on Thursday, when also the thermometer exceeded 70° in the shade in Dublin for the first time this season. Friday was at first cloudy, but afterwards fair; and Saturday proved a brilliant summerlike day. In Dublin the mean height of the barometer was 30·317 inches, pressure ranging from 30·455 inches at 9 a.m. of Wednesday (wind, E.N.E.) to 30·070 inches at 9 p.m. of Saturday (wind, calm). The corrected mean temperature was 55·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 55·5°. On Thursday the thermometer rose to 70·2° in the shade, having fallen to 47·1° on Wednesday. There was no rainfall. The prevailing winds were E. and W.N.W.

The week ended Saturday, the 20th, may be said to have witnessed the break-up of the drought, which—with slight and transitory interruptions—had held in Western Europe since the end of February. At the beginning the barometer was falling over England, Ireland, and the West of France, as a large, but not deep, depression formed over the Bay of Biscay and the Atlantic off our S.W. coasts. On Sunday the weather remained dry in most places, but much lofty cirriform stratus cloud came up from the southward, causing the sky to assume an unsettled, thundery appearance. On Monday thunder storms occurred in the West of England and in Wales, and from that time onwards to the close of the week thunder and lightning were daily reported from one part or another of the British Islands. Some very heavy rainfalls occurred—for example, 1·05 inches at Roche's Point on Tuesday, 1·60 inches at Loughborough on Wednesday, ·71 inch at Parsonstown on Friday, and ·72 inch in the City of Dublin on Saturday. On this day 1·030 inches of rain fell at the Ordnance Survey Office, Phœnix Park, and 1·020 inches at the Botanic Gardens, Glasnevin. As temperature remained fairly high throughout, the beneficial effects of the rainfall on vegetation became instantly apparent. In Dublin the mean height of the barometer was 29·634 inches, or as much as ·683 inch below the mean for the preceding week. The barometer read 30·010 inches at 9 a.m. of Sunday (wind E.S.E.), and fell to 29·407 inches at 4 p.m. of Friday (wind E.S.E.). The corrected mean temperature was 57·4°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 55·4°. On Sunday the screened thermometers rose to 65·7°, on Saturday they fell to 48·2°. Distant thunder was heard on Monday and Saturday. Rain fell on three days to the amount of ·947 inch, ·720 inch being measured on Saturday. The prevailing winds were E. and S.E.

Changeable, but favourable weather prevailed during the week ended Saturday, the 27th. At first showery, it afterwards became dry and fine, although the amount of cloud remained considerable to the end. The period began with a high pressure system lying over the Baltic and

Scandinavia, and depressions to the westward and northwestward of the British Islands. As the week advanced these conditions became reversed—the depressions travelled northeastward, and a new area of high pressure (anticyclone) came in over Ireland from the Atlantic. At the close of the period a low pressure system was found over the Baltic and Sweden, while the anticyclone remained almost stationary over, and off the west coast of, Ireland. In Dublin Sunday forenoon was rainy; light showers fell in the afternoon, but the evening proved fair. Monday was cloudy but fine. Tuesday was cloudy, showery, and squally. Some rain fell on Wednesday morning, after which the weather remained chiefly dry but very cloudy to the close of the week. The mean height of the barometer in Dublin was 30·014 inches, pressure ranging from 29·543 inches at 9 a.m. of Sunday (wind, W.) to 30·337 inches at 9 p.m. of Friday (wind, N.N.W.). The corrected mean temperature was 56·6°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 55·7°. On Sunday the screened thermometers fell to 46·9°; on Saturday they rose to 64·8°. Rain was measured on four days, the total amount being ·137 inch, of which ·059 inch fell on Sunday. The prevalent wind was first westerly, then northerly.

During the last four days the weather, which was chiefly fine but changeable, was governed by a depression over the south of Sweden and an anticyclone to the westward of Scotland. North-easterly winds prevailed, and a tendency to electrical disturbances existed on Sunday and Monday, the 28th and 29th. On the afternoon of the latter day thunder and heavy rain occurred in both London and Dublin. The weather on the 30th and 31st was bright and bracing—hot sunshine and a cold N.E. wind asserting themselves with alternate power.

The rainfall in Dublin during the five months ending May 31st amounted to 7·908 inches on 66 days, compared with 10·099 inches on 80 days in 1892, only 5·995 inches on 63 days in 1891, 11·483 inches on 76 days in 1890, 10·476 inches on 91 days in 1889, 9·068 inches on 69 days in 1888, 6·489 inches on 62 days in 1887, and a twenty-five years' average of 10·496 inches on 81·6 days.

It may be remembered that on Saturday, May 28th, 1892, 2·056 inches of rain were measured at this station, 1·900 inches having fallen within 6 hours, or at the rate of 7·6 inches in 24 hours. No such measurement had been recorded in Dublin since October 27, 1880, when 2·736 inches of rain fell. May 28, 1892, was only the third occasion within the past twenty-eight years on which the rainfall exceeded 2 inches within 24 hours in Dublin.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in May, 1893, was 1·035 inches, distributed over 11 days. Of this quantity ·310 inch fell on the 16th, and ·200 inch on the 29th. The total fall since January 1st, 1893, equals 19·565 inches on 65 days.

At Cloneevin, Killiney, Co. Dublin, the rainfall in May was 1·12 inches on 10 days, compared with an eight years' average of 2·49 inches on 15·5 days. The total fall since January 1 at this station has been 8·06 inches on 67 days. The maximal fall on any one day in May was ·40 inch on the 20th.

LA REVISTA MEDICO-QUIRURGICA AMERICANA.

In September of last year the first number of this Review was issued in New York. It is the official organ of the Pan-American Medical Congress, and the language is Spanish. The editors are Prof. Samuel E. Milliken and Dr. Pedro J. Salicrup, both of New York, and a number of practitioners in the United States promise co-operation. In October, 1891, the Permanent Committee of the Congress met at St. Louis and adopted rules for its organisation. The principal States of South America, the United States, British North America, Mexico, Central America, the English, Spanish, Danish, Dutch, and French Antilles, Hayti, St. Domingo, and Hawaii, are, or are to be, represented on the International Executive Committee.

PHYSIOLOGICAL EFFECTS OF MAGNETS.

At the meeting of the American Electro-Therapeutic Association, held in New York in October last, a paper was presented on this subject by Dr. Peterson and Mr. Kennedy, Chief Electrician at the Edison Laboratory. Stimulated by reports of such instances as Charcot's transfer of singultus from one girl to another by a magnet, Benedikt's soothing the irritability of a hysterical patient by applying a magnet to the dress covering the sensitive vertebræ, Hammond's curing completely cases of chorea in a few minutes by the same simple means, it occurred to the authors to ascertain by experiment whether magnets of enormous power "had any effect at all upon living organic matter." They obtained an electro-magnet of enormous potency (fully described in their paper), and came to the conclusion "that the human organism is in nowise apparently affected by the most powerful magnets known to modern science; that neither direct nor reversed magnetism exerts any perceptible influence upon the iron contained in the blood, upon the circulation, upon ciliary or protoplastic movements, upon sensory or motor nerves, or upon the brain;" and that "the ordinary magnets used in medicine have a purely suggestive or psychic effect, and would in all probability be quite as useful if made of wood." It will be remembered that Prof. Barrett, some years ago, made similar experiments with like results.

PERISCOPE.

SULPHURIC ACID IN CHOLERA.

THE *Occidental Medical Times* (Sacramento), in its special cholera number, published last year, gives a remarkable instance of the value of "sulphuric acid lemonade" as a preventive in cholera epidemics. "Some years ago an epidemic of cholera broke out in the Insane Department of the Philadelphia Alms House, and within twelve hours after the inmates had been put upon sulphuric acid lemonade, the epidemic ceased, no new cases occurring, except in one patient who refused to take the lemonade. The epidemic broke out again two days after the administration of the acid had been stopped, but it was again arrested by the same treatment. This knowledge, obtained by clinical experience, was explained many years later, when Koch discovered the comma bacillus and demonstrated its causal relation to cholera, for he then showed that acid mediums arrested the development of the bacillus."

GUADALAJARA.

THIS town, the capital of New Castile, with a population of 210,000, produces a medical periodical, the *Boletin del Conseja Superior de Salubridad*, of which we have received the first few numbers. It is to appear once or twice monthly, as circumstances require, under the auspices of the Board of Health, and will be distributed gratuitously with a view to excite interest and obtain co-operation in hygienic measures. We observe in a table of admissions for "afeccion tifica" to the Hospital Academico di San Miguel de Belen, in the month of January, 1893, that cases of typhus were 13, of typhoid only 8.

CASE OF PHYSICAL PRECOCITY.

THE *Journal of the American Medical Association* publishes (11th March), in a letter from Dr. J. G. Hopkins, of Thomasville, Georgia, a description of a boy, 4 years and three months old, who "measures around the chest 29½ inches; shoulders, 37; waist, 30; hips, 34; is four feet three inches high, and weighs 90 lbs. The hair under the arms and over the pubes and the genitals are as fully developed as those of the average adult. There is neither mental precocity nor imbecility. There are 20 decidual or milk teeth, and he has a splendid bass voice. There was nothing unusual at birth, at which time he is supposed by the parents to have weighed about eight pounds. The father weighs 189 pounds, the mother 110 pounds, and there are three other children of natural proportions in good health. This is a case having but few parallels in history—notably, that described by Mr. Dawkes, a surgeon at St. Ives; the boy of

'Salamus,' mentioned by Pliny, and that seen by Craterus, who was in the short space of seven years an infant, an adult, a father, an old man and a corpse."

BOIL IT DOWN.

Dr. Ward, of Fenton, Michigan, communicates to the *Journal of the American Medical Association* the following valuable advice to contributors at the meetings of the Association:—

Just a word to those good doctors,
  Who are meditating deep,
On a paper they're preparing,
  Full of thoughts too good to keep—
    Boil it down.

'Tis not words, but facts, we're wanting;
  Therefore prune and pare with pains
Your scholastic evolution
  Till an essence pure remains—
    Boil it down.

Let the meeting at Milwaukee
  Be a feast for every soul
Who attends. And let the papers
  Be as brief as Moses' scroll—
    Boil them down.

You'll remember former meetings,
  There were papers, less or more,
Hardly worth the time to listen—
  We have all been there before—
    Boil it down.

Welcome every fresh advancement,
  Hail each new discovered fact,
But in writing a description
  That attention will attract—
    Boil it down.

And remember that discussions
  Are of interest all agree;
So your paper should invite them;
  Make it short as well may be—
    Boil it down.

THE INDIAN MEDICO-CHIRURGICAL REVIEW.

We have received some of the opening numbers of this new Indian monthly, published in Bombay, edited by N. H. Chowsky. They are comfortably printed, and contain the usual material. The *Review* appears to be intended to represent the non-official medical profession, and the contributors to the issue before us are, without exception, natives of India. The city of Bombay maintains a large number of medical practitioners unconnected with Government, who will, we scarcely doubt, support this new periodical.

ABDOMINAL SURGERY AND INSANITY.

Mr. George H. Rohe writes to the *Journal of the American Medical Association* (18th Feb., 1893) with reference to statements made before medical societies, that "many abdominal sections, with removal of the uterine appendages, had been done in American Insane Hospitals with a view of the curative effect of such operations upon various psychoses and necroses;" and "that these operations had not only proved of no avail, but also that insanity not rarely followed removal of the uterine appendages for other diseases." He addressed a circular letter on the subject to every medical officer in charge of a public or private institution for the insane in the United States and British America, and received 121 detailed replies. "I found that only 39 such operations had been performed in the last ten years upon patients at the time in the

care of these institutions. To these I could add at that time 14 operations performed by myself in this hospital. Of these 53 cases operated upon, seven have been mentally cured and discharged from the hospitals. Twenty-six cases of insanity following operations upon the sexual organs were reported to me from these 121 institutions; but of these eight had recovered and been discharged, showing that the mental aberration following the operation had been only temporary; two were in an improved condition, four had died, and twelve remained under treatment, showing indeed a very small proportion of persons insane enough to demand hospital or asylum restraint."

CURES FOR INEBRIETY.

DR. PETERSON, of New York, contributes to the *Journal of the American Medical Association* (April 15) an interesting paper on the "Treatment of Alcoholic Inebriety." In illustration of his assertion that "some of the advertised inebriety cures seem to be not only swindles but cruel and criminal swindles," he gives, on the authority of the chemist of the Massachusetts State Board of Health, the percentage of alcohol in eleven of these "cures." In two it is moderate—7·0 and 7·65; in the others it ranges from 13·2 to 41·6. Of the Keeley cure, of which we hear little now, he says:—"The so-called gold cure of Keeley, upon analysis, was found to contain no gold at all, but in each teaspoonful about $\frac{1}{32}$ of a grain of muriate of ammonia, $\frac{1}{16}$ of a grain of aloin, and 45 minims of compound tincture of cinchona. His hypodermic injection was ascertained to be composed of sulphate of strychnia, atropia, and boracic acid. The Keeley cure, while it has been doubtless effectual in curing many cases of inebriety, has not made use of any drug not long ago tried by physicians all over the world. One of the advantages of this much-lauded method is undoubtedly the effects of repeated suggestion."

THE HUMANITARIAN.

THIS monthly periodical, devoted to the physical, intellectual, and moral advancement of the human race, edited by Mrs. Victoria Woodhull Martin, and published in London, is in its second year of existence. Excellent are its aims and faultless its typography; but we fear it is "caviare to the general," and unlikely to reach the classes most in need of its teachings.

RADICAL CURE OF HERNIA.

THE *Bulletin of the Johns Hopkins Hospital* for March contains a paper on this subject by Dr. M. S. Halsted, the Professor of Surgery, from which we quote the following summary:—"Since the opening of the Johns Hopkins Hospital, 3½ years ago, 82 operations for the radical cure of hernia have been performed, and without a death; 64 of the cases were males, 18 were females. Of the females, four had femoral,

13 inguinal, and one umbilical hernia. Of the males, 63 had inguinal and one femoral hernia. Five of the males were operated upon by Dr. Brockway by M'Burney's method. Of these five cases two have recurred; two have not been heard from; and one, a boy two and a half years old, is still well, 20 months after the operation. The cord in so young a patient is so very small that the hernia might be cured for several years by almost any method. My operation, with or without modification, was employed in 58 cases. Of the cases which healed per primam, not one has recurred."

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

New Compressed Tabloids.

Messrs. Burroughs, Wellcome & Co., of Snow Hill Buildings, London, E.C., have recently added the following to their long list of compressed tabloids:—*Effervescing Belladonna and Cubebs Tabloids.*—These tabloids are composed of a formula specially recommended by Mr. Lennox Browne in various forms of rhinitis, laryngitis, bronchial catarrh, laryngeal cough, and throat affections. *Arsenite of Copper Tabloids.*—Each of these contains 1/1000 grain of the salt, and are intended for use in the treatment of cholera morbus, cholera nostras, cholera infantum, dysentery, and typhoid fever. This attenuated strength of the arsenite of copper is intended specially to allow of the frequent and regular administration of small doses, which are said to be the conditions essential to success. *Tabloids of Tar.*—These tabloids, of which each contains one grain of tar, have been put up by the firm at the request of several physicians, who found it difficult to obtain a preparation free from acrid principles. The tar used in these tabloids is absolutely pure, and their use is indicated in such cases as bronchitis, bronchorrhœa, and pulmonary affections.

Analgen.

We have received from Messrs. Christy & Co. samples of a new nervine drug termed Analgen. It is a synthetical derivative of quinolin, and enjoys a portentously long chemical name and formula which it is unnecessary to reproduce. It is represented to be a safe and efficient drug, similar in action to antipyrin, and a number of medical men have tried it in Germany with encouraging results. Messrs. Christy supply it in 7 gr. tablets, and in elegant wafer cachets, each containing 7 grs. The maximum dose is 45 grs. daily.

A Special Report on Surgery by Mr. R. Glasgow Patteson, M.B., F.R.C.S.I., is unavoidably held over to the August number of the Journal.—Ed.

THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

AUGUST 1, 1893.

PART I.

ORIGINAL COMMUNICATIONS.

ART. III.—*Notes of Two Cases of Cerebral Surgery.*[a] By CHARLES B. BALL, M.D., M.Ch. Dubl.; University Examiner in Surgery; Surgeon, Sir Patrick Dun's Hospital.

IT is, I think, in the present state of brain surgery, of importance to place on record all cases tending to throw light on cerebral localisation of disease and the operative treatment had recourse to. I beg therefore to bring forward two additional cases—one of Jacksonian epilepsy, the other of large abscess in the temporo-sphenoidal lobe. For the notes of the former I am indebted to Mr. Dixon, and for the latter to Dr. Kiddle:—

CASE I.—A. C., aged thirty, a fitter, December 24, 1890, fell on his head a distance of 14 feet, alighting on some stone flagging. He was admitted to hospital with a scalp wound about 4 inches long, over right occipital and posterior parietal regions. He was unconscious; no fracture could be detected. For a fortnight he remained dull and listless with paralysis of the sphincters, and subsequently became maniacal; he, however, apparently completely recovered, and was discharged on January 27, 1891. Nine months subsequently he was admitted again to hospital with twitchings of left hand and arm, and partial left facial paralysis, but left after five days in hospital.

On December 29th, 1891 (a year after the injury), he was re-admitted

[a] Read before the Section of Surgery in the Royal Academy of Medicine in Ireland, on Friday, May 12, 1893. For discussion on this paper, see page 527, Vol. XCV.

to hospital; he had a series of epileptic fits which had commenced that day. Immediately after his admission he had a fit in which the following phenomena were noticed:—The left hand and arm began to twitch, the arm becoming flexed to a right angle at the elbow, the twitching then spread to the face, both legs, and right arm; all the muscles of the left side contracted more violently than those of the right, the face muscles very much so, and the left side came to rest first as the fit passed off; the eyes were turned up and to the left, the right pupil was somewhat dilated; head was thrown back and turned to the left, the muscles of the neck were very rigid. The clonic spasms lasted about one minute, and as they passed off the patient immediately recovered consciousness and sweated profusely, with conjugate deviation of the eyes to the right; there remained loss of power and sensation very marked in the left arm, and to a less degree in the face and leg; he was unable to move his eyes

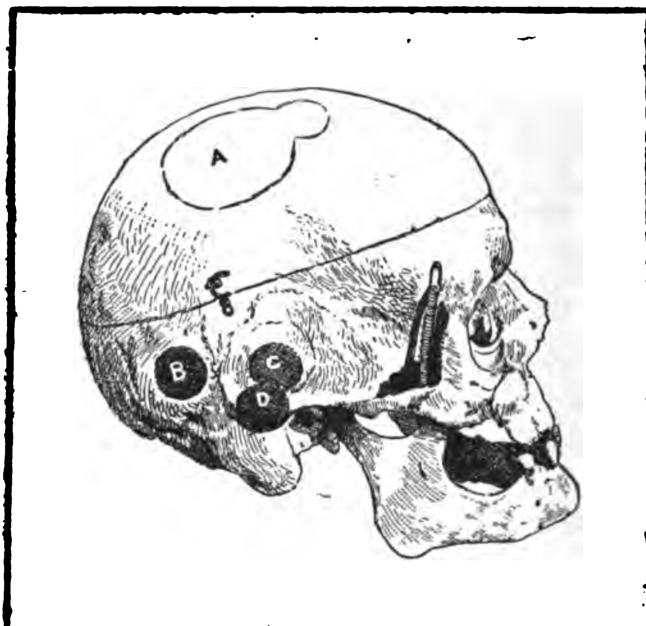


Figure illustrating Dr. Ball's Paper, drawn to scale.

A—Position in which trephine was applied in Case I.

B—Situation recommended by Mr. Barker for trephining in case of temporo-sphenoidal abscess.

C—Position selected in Case II.

D—Situation recommended by Mr. Wheeler.

The small dark circle below D marks the place recommended by Prof. Birmingham for opening the mastoid antrum.

to the left. During the first 48 hours in hospital he had 46 fits, all of which commenced in the left arm and ran a course similar to the one described.

A more typical picture of Jacksonian epilepsy due to cortical lesion it is hard to imagine, and as the spasms invariably commenced in the left hand and arm, it was determined to explore the right central motor area, notwithstanding the fact that the scalp wound was considerably behind and below this region. As it was not clear which of the arm centres was most involved, a two-inch trephine was applied to the middle of the Rolandic area, and the dura mater divided crucially in the opening thus made (A in figure). The brain was now carefully explored. At the upper and anterior portion of the circumference of the opening the dura was tightly adherent to the bone and subjacent brain, and in order to expose this thoroughly it was necessary to apply a three-quarter inch trephine. I found there for an area of about the size of a sixpence the grey substance of brain appeared altered into soft connective tissue, through which the subjacent white substance could be distinctly seen. The adhesions of the dura at this point were carefully separated, the flaps of membranes replaced and sutured with cat-gut, and the scalp replaced and sutured. The following day, January 2nd, the left arm was absolutely paralysed; he had also facial paralysis, slight strabismus, and dilatation of right pupil.

The recovery of motion in the arm was most interesting. On the third day he was able to move the shoulder muscles slightly; on the fifth he was able to move the arm at the elbow, but could not stir the fingers; by the 29th day he was able to flex the fingers fairly well, but could not stretch out the arm from the body; it was not for nearly a month subsequently that he was able to reach out his arm so as to pick up any object, and fully extend his fingers. The facial paralysis subsided a few days after operation. He convalesced well, the only drawback being that a buried catgut suture caused a few drops of suppuration, and was discharged after the wound had healed a month after operation. While this was forming he was a little dull and heavy, but completely recovered after its evacuation. He has had no fit since the operation, but on the 8th March, 9 weeks after operation, the muscles of the left arm became rigid for a few minutes, followed by rigidity of the legs and right arm. There has been no recurrence of this symptom. He was discharged on the 5th of May, and was able to resume work as a fitter at the D. W. & W. Railway.

The lesion here was situated in the front of the ascending frontal convolution, and encroached on the posterior part of the superior frontal convolution to the centre, described by Ferrier as the pointing centre (No. 5), and the slow recovery of the power of extension of the arm, compared with the other motions exhibited, is a striking instance of the

accuracy with which the function has been localised in this region of the brain.

CASE II.—B. R., female, aged seventeen years, admitted to Sir Patrick Dun's Hospital, August 9th, 1891. Six months previously she had received a blow on the right ear, followed by purulent discharge from the meatus, which has since continued.

On admission she lay in a listless, semi-comatose condition, but could be roused to take food and answer questions; she was very pallid; complained of great pain in her head, increased by percussion, also pain in back of neck, which was rigid, the head being retracted. There was slight internal strabismus stated to have been of long standing, pupils were regular and reacted to light, temp. 101°, pulse 92, slight purulent discharge from right ear, no œdema or marked tenderness over mastoid bone on that side.

She remained in the medical wards from August 9th to October 27th, during which time the following more important features of the case may be noted:—At times she was well enough to get up and go about, at others she lay in a semi-comatose condition, with relaxation of the sphincters, while again she had constipation and retention of urine. She vomited frequently; on two occasions she had a kind of fit, and became quite unconscious, the eyes staring, muscles rigid, followed by some irregular movements of right arm and leg—this condition lasted only a few minutes. On October 7th she was observed to have double optic neuritis—a condition which steadily increased, while the right pupil became markedly dilated. On October 26th she had a rigor, followed by a temperature of 101°. She was cyanosed, and complained of extreme pain in the head. It was consequently decided to trephine her at once, the diagnosis being made of abscess in the temporo-sphenoidal lobe, based mainly on the following grounds:—1st, long continued ear discharge; 2nd, gradually increasing stupor; 3rd, vomiting; 4th, double optic neuritis; 5th, dilatation of right pupil; 6th, rigor, fever, and great intra-cranial pain. The sense of smell was not tested.

I selected for the application of the trephine the place recommended by Mr. Hulke—directly above the external auditory meatus, and, profiting by Prof. Birmingham's valuable measurements on the mastoid region of the skull, took care that the lower portion of the trephine circumference was half an inch above the roof of the external auditory meatus (C in figure). Upon removing the circle of bone the large posterior branch of the mid-meningeal artery was exposed crossing the centre of the opening; this was caught between two catch forceps, and the dura-mater divided across the whole circle exposed. The brain, much engorged with blood, bulged into the wound; the under border of the temporo-sphenoidal lobe being exposed, it was easy with a flat spatula to raise the brain from the

petrous bone, absence of adhesions demonstrating that there was no direct continuity between the ear disease and the brain. A sterilised exploring needle was now thrust into the brain. At a distance of about a quarter of an inch an abscess cavity was opened, and the opening subsequently enlarged by separating the blades of a sinus forceps; a considerable quantity of pus, at least 1 fl. oz., escaped, and a drainage tube passed into the cavity, which was quite two inches across. The subsequent progress of the case was most satisfactory. On the 8th day, the discharge being only serous, the drainage tube was removed, and the sinus allowed to heal. Three weeks subsequently she became dull with increase of temperature and pain; the scar becoming prominent, the cicatrix was incised, and exit given to a small accumulation of pus. After this she gradually improved, became bright and cheerful, the optic neuritis disappeared, and she was discharged quite well, Feb. 8, 1892. Since that date she continued well; she has grown quite robust; a slight otorrhœa continuing for about six months after the operation, but is now completely stopped.

The best position for applying the trephine in cases of cerebral complications following otorrhœa, although much discussed, can scarcely be said to be as yet definitely settled. To this desirable end the papers of Prof. Birmingham on the mastoid region of the skull form a most important contribution. In them are to be found what the surgeon really wants—the limits of variability of important structures, and not the average position. From these it will be seen that the lateral sinus is subject to great variability, and that if the trephine is applied in the position selected by Mr. Wheeler (D in figure)—*i.e.*, the circumference of the trephine on a level with upper border at the external auditory meatus, and in front of a vertical line passing through the tip of the mastoid process, the lateral sinus will be exposed in a considerable proportion of cases. In addition to risk of hæmorrhage, the field of operation is much limited by this procedure Again, on mechanical grounds, as Prof. Birmingham has shown, this operation is objectionable; while one portion of the trephine circumference is cutting the thin squamous portion of the temporal bone, the lower portion is cutting deeply into the petrous bone. Undoubtedly, with care the remaining piece of bone can be broken through to remove the crown, but it is manifestly advantageous to select, if possible, a region for trephining where the skull is of more uniform thickness. There is, however, I think, a much graver objection to the adoption of Mr. Wheeler's site than either of the anatomical points above alluded to—that is, that where otorrhœa has existed for some time

the air cells of the mastoid and so-called mastoid antrum are in a highly septic condition. If now one portion of the trephine crown is cutting through this highly septic focus, while the other is opening up the cranial cavity, it is impossible to conceive a more probable way of producing intra-cranial sepsis. With regard to the position selected by Mr. Barker (B in figure), Reid's base line must first be marked out—*i.e.*, a line joining the lower margin of the orbit with the middle of external auditory meatus, and produced backwards; the point at which the pin of the trephine must be applied is one and a half inches behind the centre of the external auditory meatus, and one and a half inches above this line. As Prof. Birmingham has pointed out, a three-quarter inch trephine applied here will sometimes expose the lateral sinus, and he suggests that to avoid this important structure the point selected should be two inches above Reid's line. In my opinion, Barker's point is too far removed from the focus of disease, while the additional half inch necessary to certainly avoid the sinus removes the site of operation still further from the disease. I was present at an operation in which a three-quarter inch trephine, applied at Mr. Barker's point, exposed the lateral sinus, and failed in reaching an abscess which would readily have been dealt with had the opening been made immediately above the meatus. It appears to me that in the majority of cases of otorrhœa requiring surgical aid it will be possible so far to diagnosticate the state that one of four operations should be selected:—1. When disease is confined to the mastoid bone the antrum should be opened on the lines laid down by Professor Birmingham (small denticircle below D in figure), and the cranial cavity not encroached upon at all. 2. Where abscess of the temporo-sphenoidal lobe is indicated, trephine immediately above the external auditory meatus, so that the lowest point of the trephine circumference is half an inch above the upper margin of the external auditory meatus. 3. Where the symptoms point to abscess of the cerebellum, as Professor Birmingham has pointed out, a three-quarter inch trephine applied one inch below Reid's base line, and two inches behind the centre of the meatus, will expose the cerebellum below the lateral sinus. 4. Where thrombosis of the lateral sinus is diagnosticated, cutting across the internal jugular vein and scraping out the septic clots, as recommended by Mr. Ballance, appears to be the most scientific procedure.

Art. IV.—*Old-fashioned but Useful Skin Remedies.* By Henry S. Purdon, M.D., Physician, Belfast Skin Hospital.

I wish in these brief notes to call attention to some old and neglected remedies for the local treatment of various diseases of the skin. In the present day, in our longing after some new remedy, we are apt to forget those applications that have been tried and stood the test of years. The first one on my list is "Friar's Balsam," or the compound tincture of benzoin. The late Dr. Neligan, of Dublin—a no mean authority on diseases of the skin—in his work on "Medicines: their Use and Administration," 5th edition, 1858, dismisses Friar's Balsam with the following words:—"This tincture was formerly much employed as an application to wounds and contusions under the name of Friar's Balsam." However, I have seen wounds and ulcerations heal under its use, when carbolic acid or the more fashionable iodoform failed. The late Dr. Gordon, Professor of Surgery, Queen's College, Belfast—a practical and clever surgeon—used gallons of compound tincture of benzoin in his hospital practice, not only after operations but using it as a lotion, and also in various other surgical complaints as an injection—for instance, in the case of a sinus, &c. Painting fissures of the lips and tongue after first drying saliva from the part with Friar's Balsam, is a far better application than the glyceroles of either borax or tannin. In my own practice one drachm, or even two, of Friar's Balsam to an ounce, say, of zinc ointment is nearly a "specific" for indolent or sluggish ulcers, no matter where situated.

The next old-fashioned remedy to be noticed is the well-known "black wash," still largely used as a dressing to venereal sores. However, there is a non-specific affection of the skin which, when occurring on the lower extremities, is about as troublesome and tedious a complaint as any one can possibly have—I refer to red-eczema, *eczema rubrum*, and which is associated with intense itching, burning, weeping of serum, and more or less swelling of affected part. It is to Dr. Spender, of Bath, that the credit of suggesting "black wash" as an application in this disease is to be given. I use it frequently in the way that he has advised, I may say, without failure. He says (*Journal of Cutaneous Medicine*, Vol. IV.):—"Take some common black wash, mix with it a tenth or twelfth part of glycerine by measure, and let it be well shaken. A small quantity of this mixture being poured into a wide shallow

vessel, as a saucer, strips of linen are soaked in it, and after being lightly squeezed, are placed evenly and smoothly round the affected limb, a portion of the black oxide of mercury adhering to the linen. A bandage secures the dressing in its place, and the work is done. The dressing should be renewed night and morning; an impervious covering should on no account be put over it, as the pent-up secretion would decompose and possibly inoculate a fresh area of skin. The dry linen strips can always be easily removed by being first well saturated with warm water."

Acne, the sebaceous form especially, when occurring on the face, is tedious, troublesome, as well as disfiguring. The usual treatment with sulphur applications is not always successful, even if we combine a few grains, say 10, of the green iodide of mercury to the ounce of ointment. I have recently adopted, and with good results, rubbing the affected part at night with the (now discarded) "oil of amber," washing it off next morning with hot water and soap. Oil of amber has a pleasant odour, is much cleaner than an ointment, penetrates into the follicles, and is especially, if long continued, an active rubefacient, producing more or less irritation and slight redness of the skin. I consider this oil worthy of being placed in the dermatologist's list of remedies.

"Balsam of Peru," now chiefly used as an ingredient in pomades to prevent baldness, is not only an excellent stimulant when added to ointment for the healing of ulcers, but also in various ways for relief of pruritus vulvæ. However, as a method for the cure of scabies, it is to be well rubbed over all the body except head and face, but especially between the fingers, toes, wrists, and abdomen; it compares favourably with sulphur ointment, and does not produce any secondary eczema. The expense of the remedy is, however, against its general use. I need hardly mention camphor as an anti-pruritic remedy, or "Liquor Plumbi," so well known and still in use, but will conclude by observing that, as a basis for ointment in place of lard, the old-fashioned "Ceratum Galeni," or cold cream, is much preferable. I have endeavoured to improve on it, however, by making my basis consist of lanoline, best almond oil, spermaceti, and enough white wax to give consistence. In this I believe we have as nearly as possible a perfect material for ointments—a view borne out by the testimony of the leading dermatologist of Sydney, Dr. W. M'Murray, who, as a pupil at Vienna, Paris, Hamburg, and Berlin, may be allowed to speak with some

authority. He told me a short time since that he had adopted above suggestion and with good results. The late Sir Erasmus Wilson pointed out years ago "the prevention of rancidity of fats and oils used in the preparation of ointments is of immeasurable importance in local cutaneous medicine. It is to be remembered that a cutaneous eruption, by virtue of the inflammatory congestion which exists, is an actively oxidising surface, and ointments containing lard, perfectly fresh when applied, are apt by absorption of oxygen, to pass quickly into a state of rancidity."

ART. V.—*Case of Enteric Fever, complicated by Purpura, and in which a Malarial Type of Temperature Curve occurred.*[a] By RICHARD A. HAYES, M.D., Dubl. Univ.; Physician to Dr. Steevens' Hospital.

THE occurrence of purpura, while not uncommon in many other fevers, is, so far as the writer is aware, so very rarely observed as complicating enteric fever that the following case seems worthy of record:—

CASE.—W. R., aged twenty, was admitted to the male private ward in Dr. Steevens' Hospital on the 12th March, 1893, under the care of the writer. It was stated that the patient had been ailing for more than ten days previously, but he was not able to give much information about himself, being on admission very seriously ill.

His temperature was found to be 103°, rising the following evening to 105°. He was very prostrate, with soft, weak pulse. Spleen a good deal enlarged; a few rose spots on abdomen, which was tender over right iliac fossa. He had when first seen, and for some days afterwards, profuse diarrhœa. Four days after admission he had two sharp hæmorrhages.

About a week after admission the fever showed signs of commencing lysis, temperature falling and other symptoms improving; but in three days a relapse occurred, the temperature again rising to 102°, with fresh rose spots, &c.

The relapse had continued without any feature worthy of mention for 25 days, the diarrhœa giving place to constipation, when on the 25th day there was a return of diarrhœa, followed next day by two considerable hæmorrhages. Matters then went on almost as before for a week, when, on the 32nd day of the relapse, the patient's gums began to bleed

[a] Read in the Section of Medicine of the Royal Academy of Medicine in Ireland, on Friday, May 19, 1893.

quite freely, and blood appeared in the urine. At the same time blood was also found in the motions, but it appeared to occur in quite a different manner from the hæmorrhages usually observed. It seemed to be rather the result of a continued oozing than bleeding from a vessel opened by ulceration. Several considerable bleedings also occurred from the nose. The Sister in charge also showed me a large patch of subcutaneous hæmorrhage over the right scapula, and many purpuric spots on the limbs.

These symptoms lasted for nearly a week, gradually subsiding, apparently being influenced by a change in the treatment, which will shortly be detailed. The further progress of the case, ending in a very tardy convalescence, did not present any features of interest.

It seemed quite impossible to account in any satisfactory way for the occurrence of the above curious condition, coming on as it did so late in the course of the disease. The patient was a healthy individual, possessing very considerable stamina, as shown by his steady recovery from an unusually severe illness, and there was, so far as I could ascertain, no history of hæmophilia.

The treatment pursued in relation to this condition, which, owing to the profuseness of the bleeding from so many parts simultaneously, seriously threatened the patient's life, may be shortly mentioned. Previously and up to the occurrence of the purpuric troubles the patient had been getting ℳ 15 doses of spt. terebinth as punch with brandy, as a general stimulant and disinfectant to the intestinal tract, but on the appearance of the hæmaturia this drug was stopped, as being a possible cause of the hæmorrhage from the urinary organs. After the purpura had continued for some days, and appeared to be quite uninfluenced by several hæmostatic drugs, the turpentine was resumed, and almost immediately the hæmorrhages began to decline, and finally ceased.

This case presented during a part of its course another feature of interest, and, so far as the writer is aware, a rare one in this country--viz., a temperature curve exhibiting well-marked variations of a malarial type in addition to the usual diurnal ones of enteric fever, which occurred as follows:—Each third day the temperature suddenly rose 3° to 4°, and as suddenly sank to a level about that at which it had previously stood, and remained there with the usual daily variations until the third day following, when the same large rise and fall took place. These extreme elevations of temperature were accompanied by a condition of rigor, very severe, and lasting sometimes for a period of half an hour, the fall

of temperature being accompanied by profuse sweating and collapse. This state of things lasted for 14 days, the before-mentioned purpuric symptoms showing themselves at about the middle of this period. The patient had never suffered from ague.

ART. VI.—*The Applicability of Hygiene to the Conditions of Modern Warfare.*[a] By J. LANE NOTTER, M.A., M.D., M.Ch. University of Dublin; Professor of Military Hygiene at the Army Medical School, Netley; Brigade Surgeon, Lieut.-Col., Army Medical Staff; Fellow and Member of Council, Sanitary Institute; Examiner in Hygiene, Science and Art Department, London: Examiner in Public Health, University of Cambridge, &c., &c.

I OFFER no apology for bringing forward this subject, for since 1860 England has practically been annually engaged in some form of military expedition or other in various parts of the globe, and has in consequence gained an experience in practical sanitation in war unequalled by any other country. I venture, as the representative of that army, to bring forward some considerations as to how far, consistent with the exigencies of modern methods and conditions of warfare, the general principles of hygiene can be applied with a view to mitigating, if not obviating, much of the disease and suffering incidental to military operations; at the same time not losing sight of the fact that, notwithstanding the greatest efforts, the hygienic ideals of peace time are impossible of attainment during a period of war.

Inasmuch, the *raison d'être* of the existence of a standing army at all is essentially the drilling, training, and preparation of the individual soldier for purposes of war, we find that the very first care is the proper selection of troops, and in making this selection we find these factors prominently asserting themselves—they are size, weight, and age of the men. The consideration of these factors is essentially one for peace time, and a nation having once committed herself to war has no choice left in dealing with these matters, but every available man must be utilised for military service, regardless of temperament, age, or any other consideration.

[a] Read at World's Auxiliary Congress, Chicago, June 12 to 18, 1893.

While the hygienic bearings of military life are fairly simple in peace time, the moment war breaks out we find the conditions alter materially—in fact, so much so that all hard-and-fast rules, or preconceived ideas as to the attainment of a perfectly hygienic mode of life by an army in the field is practically impossible. To state this briefly, the only hygienic methods possible are those which the circumstances of time and place admit of. We must use what we can get, taking care, however, to arrange the work and condition of labour which the individual has to perform as much as possible in accordance with our hygienic ideal. Being in a state of war, this will naturally be difficult to attain in its entirety.

Food and Drink.—The feeding of large masses of men in the field will need to be conducted on the same dietetic principles as the feeding of similar multitudes in peace time. The main points on which this will differ will be absence of regularity and difficulty of supply—the former must necessarily be subordinate to military exigencies, but the importance of regularity in feeding should never be lost sight of. As to the nature of the supply, in the present day of excellent methods of preservation of food stuffs, little difficulty is likely to arise, provided the transport arrangements are adequate. The maintenance of a regimental supply unit would seem to be preferable to the larger one by brigades. In fact, to adequately carry out a proper supply the regimental unit should be rigidly adhered to. It should also be clearly understood that the emergency ration is purely a supplementary one, and in no case ought to be reckoned as a part of the ordinary field ration.

As concerns the supply of drink to an army in the field, water must necessarily form the staple element; with an advancing column systematic filtration is impossible; reliance will have to be placed on simply boiling the water before filling the water-bottles; when this cannot be done, the only safeguard will be that of selecting the purest supply possible. Men should be taught the danger likely to follow on drinking water the source of which is unknown, unless this has been previously boiled.

Filters.—If a filter is to be employed at all, some form of the Chamberland-Pasteur seems to be the best; but as yet no form at once portable and easily used has come under my notice. All medical officers are unanimous in condemning the issue of alcohol as a ration in the field. The only form in which it is

admissible is in the form of light red wines, which are best taken when freely diluted with water. The consensus of opinion on this point is so unanimous that further reference need not be made here.

Preventable Diseases.—Within the scope of this paper it is impossible to deal with the many diseases incidental to warfare; briefly stated, those which most frequently render men non-effective are diarrhœa, malaria, heatstroke, and footsoreness—these are all more or less preventable.

Diarrhœa.—In the field, diarrhœa is a disease which is early met with, consequent on a change of food and chill. It has occurred in every expedition, and is frequently followed by enteric fever, the passage of the one disease into the more severe being rapid, and increasing as the age of the men composing the force diminishes, the younger men suffering most. In camps and on the march the latrines should be kept in a perfectly sanitary state, and as disinfectants are not always available, they should be dug deep and narrow, and covered in with six inches of clean earth daily, the same trench not being used for many days in succession. Men suffering from diarrhœa, which does not yield in a day or two to simple remedies, should be passed on to the field hospitals for further treatment.

Malaria.—As regards malaria, little can be done on service to make a temporary site in a malarious country healthy. Any form of subsoil drainage is impossible, and the rule should be not to occupy such positions longer than actual necessity obliges. With the rapidity of movement incidental to modern methods of warfare, men will seldom remain sufficiently long in one place to undertake work of any permanent character. The securing of an ample supply of food, the avoidance of chill, damp clothes, night air, and with the issue of an early morning ration of coffee or cocoa, with biscuit, is about all we can do. For operations in malarious countries the selection of troops is one of importance, for there is no "seasoning" process against paludăl fevers; on the contrary, one attack, in place of conferring immunity, predisposes to another. The prophylactic use of quinine has not been followed with any success under the circumstances mentioned.

Heatstroke.—Heatstroke is a thoroughly preventable disease; it occurs in two forms—by direct solar heat, and by the effect of a heated atmosphere independent of the sun's rays. Against

the result of direct solar heat, a proper protection for the head and body is necessary. Marches should not be undertaken in the tropics when the sun's rays are vertically over the head; the morning or evening is the time indicated. If military necessity demands it, it is better that men should march at night than that they should be exposed to the risks incidental to a mid-day march; but the fatigue which this occasions should not be lost sight of, nor the inconvenience of reaching a camping ground or bivouac in the night and darkness.

On the march the most open order must be maintained. If the ranks close up, the temperature in the ranks rises, and the air around the men becomes loaded with organic impurity.

The men should march at ease, with as great freedom of movement as possible; their coats, &c., open, and the weights they have to carry, as far as possible, reduced to a minimum. This lessens the mechanical work which they have to do, and thus fatigue is lessened. Halts should be frequent and sufficient, and every advantage taken of any shade.

Some of the symptoms of heatstroke may also be caused by the reflected rays of the sun through the orbit when the optic nerve is exposed to direct rays of light.

In the tropics neutral tinted glasses are frequently worn, and the sense of relief experienced by the wearers tell the advantage their use affords. They were found effective in the form of goggles in the Egyptian Campaign of 1882, as protection against glare, heat, and sand, and thus in warding off ophthalmia.

If racial prejudices could be overcome, there is no doubt that the headdress worn by Asiatics would be of immense advantage to Europeans when fighting in the tropics, as it affords a coolness and protection which the present helmet fails to secure.

To guard against the effect of indirect heat, the most open order in camp must be maintained, and when tents are used, only those with double flies should be sanctioned for the tropics. The lining should be of a pale blue colour, as used in the Sepoys' tents in India. Men should not occupy the tents at night unless the country is a malarious one, and even then a very slight covering will afford protection against malaria. Overcrowding is one of the most constant and most dangerous factors in the production of heatstroke.

On the march the early symptoms of heatstroke should be watched for and timely aid afforded. The staggering gait, the

flushed countenance, abnormally frequent micturition, and the absence of perspiration, should at once demand the attention of the surgeon and timely aid afforded.

Footsoreness.—Footsoreness is one of the most troublesome ailments the surgeon is called upon to treat on the line of march. The initial hardness of the leather used in military boots is the cause of much suffering. Once the boot is moulded to the shape of the foot it does not press unduly, and, as regards wear, excels any other, but this is a comparatively slow process. Greater pliability of the material should be aimed at, as well as greater care in fitting the foot. The heels should be low and flat, as these have an important influence on the rhythm, which in its turn influences the rate of speed and lessens fatigue.

Camps.—In war any theoretical ideas of the site for a camp must be abandoned and advantage taken of any position which presents itself. So, too, as regards tents. The advancing army in any future European war must be prepared to bivouac where military exigencies require it to halt, and, so far as we at present foresee, the transport available will not be more than equal to providing provisions and ammunition for those in front, and removing to the lines of communication or to the base the sick and wounded of the force. On this account some sort of light shelter tent which can be readily adjusted seems indispensable—one to be carried between every two men, the parts being interchangeable. It might also be made so as to afford protection against rain, if worn as in the German Army in the form of a "poncho."

As regards sanitation, it is useless to attempt much; there are, however, two points which should claim the personal attention of the surgeon, and these are:—

1. The nature of the shelter provided.
2. The disposal of excreta.

So long as men are on the march, and are not provided with tents, density of population on a given area matters little, but when, however, tents are occupied, this becomes an important factor. Whether in tents or in civil buildings, any overcrowding is soon followed by disease, and the best efforts of the military surgeon should be directed to mitigating this error.

The best kind of tent is still a desideratum, but the chief points to be aimed at are to secure adequate protection from the weather, a free movement and interchange of air, a double

fly for tents when campaigning in the tropics, that the tent should be as light as possible, and that it should not be of too conspicuous a colour.

In malarious countries the soil under the tent should be beaten down as far as possible, so as to prevent exhalations from the ground and to keep the tent floor impermeable. Temporary drainage should also be secured.

Camp Latrines.—Camp latrines should be placed to leeward of the tents and at least fifty to one hundred yards distant; the trenches should be deep rather than wide, so that the surface exposed to the sun and air may be as small as possible; if the camp is for more or less permanent occupation the trenches may be four or five feet deep, small quantities of soil being added daily, and the trench filled in when within two feet of the surface. For merely temporary use all trenches should be one foot wide, one foot deep, with a space of one foot between each line, the trench to be filled in when six inches from the surface.

Trenches are suitable only for men in perfect health, for those suffering from slight diarrhœa or dysentery it is no easy matter for men to get up, say, six or eight times in the night and to grope their way to one of these trenches, or to avoid falling into it if he succeed in his expedition. A man suddenly attacked with illness could not do it; a lazy man would not do it if he could find a handier place near by; both might be excused for refusing to go, say, one hundred yards away, under a burning sun, during tropical rain, or with a thermometer at or below zero Fah.

A latrine barrow would obviate most of the inconvenience. The body made of a sort of box, suspended on an iron bar springing from the wheel axle. Such a movable latrine could be easily placed in the most convenient situation and emptied as often as necessary; it could be wheeled off to a safe distance and brought back after cleaning and disinfection. No one knows, except they have experience of it, what labour and anxiety this question of latrines gives. Fevers have been the scourge of armies, and of all armies that become stationary for a short time. Why? Because of this great latrine difficulty. To take over houses or civil buildings and to use the common privies, or w.c.'s, such as exist in Continental towns, would be simply to invite the spread of enteric fever, cholera, &c., and to

avoid the risk which is always present, I most strongly advocate some system such as I have very briefly sketched out here.

First Aid.—In war, with the modern arms of precision, and the vast size of Continental armies, it is impossible to have an adequate "first aid." The medical services in all armies are undermanned, and even in peace time it is difficult to find surgeons for the work to be done. The cost of a medical service is so large in proportion to its strength, that it is hopeless to expect any increase to that strength. The problem then is, how can we best utilise what now exists for meeting the exigencies of war.

In the British army the Army Medical Staff is divided into two branches, Executive and Administrative. In the former, all wars have shown the officers to be fully competent for the discharge of their duties; the failure, if failure there has been, has happened in the administrative grade. In war it is not difficult to obtain a number of surgeons well up in their professional work; but what it is almost impossible to form at a short notice is, a body of officers, thoroughly trained in army medical organisation according to existing regulations; men of good administrative ability, having a full comprehension of the urgent necessities which spring from modern warfare, and with a knowledge how to apply the available medical assistance as effectively as practicable whenever and wherever it is most imperatively required.

To obtain this there should be a large extension of the system of personal responsibility, so that the mind may be trained on a larger basis, that medical officers in peace time should have more independence, and deal within their province with questions of greater magnitude. The defects in the past have been largely in the direction of a want of independence on the part of the medical department. They have always been fettered by being dependent upon other corps for material. No medical department can ever be thoroughly efficient which has not actual and absolute control over all elements essential to its successful working. Owing to the large numbers likely to be engaged in future wars, large numbers are likely to be placed *hors de combat* within a short time; the best system of first aid must necessarily be unable to deal adequately with such numbers. There is need for the public to recognise this fact, and so to avoid any outburst of hysterical clamour; if nations will make war, they must pay the penalty.

Disposal of the Dead.—The disposal of the dead on the battlefield is a sanitary question of the first importance. In any future war it must be impossible to resort to burial as a means of disposal, and it is useless to waste time in discussing the best disinfectants to use. Incineration as practised at Sedan, by pouring tar on the bodies and then setting fire to the pile, was a demoralising and futile process. Burial alone means labour, and labour can ill be spared or expended in this direction in war. Civilised armies are bound, not only in their own interests but of those who inhabit the districts close to the scene of action, to dispose of their dead, so that they shall be no nuisance. Cremation seems the only satisfactory solution of the difficulty. It disinfects the soil and air; it is speedy, and has no demoralising effect on the *morale* of the men; it renders the immediate neighbourhood healthy for the sick and wounded; it does not defile the ground; in a word, it is cheap and effective, and satisfies every sanitary requirement; and it is hoped that this method, which has already made some considerable progress among the community at large, will in all future wars be put into practice, and that the old plan of burial will give place to cremation as the only safe method for disposing of the bodies of those who fall on the field of battle.

TELEPHONIC BULLET-PROBE.

STEPHEN SMITH, M.D., details (*Medical News*, Philadelphia Vol. LII., No. 18) a case of shot-wound of the orbit in which he used a telephonic bullet-probe. The conclusions he comes to as to the value of the probe are:—1. The telephonic bullet-probe is an instrument of great precision in detecting the presence of a ball, but much care is required in exactly locating this when lodged in any region at a considerable distance from the surface. The experience gained in this case made it evident that the precision of the instrument would be increased if the shaft of the probe were protected and only the penetrating extremity were uncovered. 2. Sudden and total loss of vision when a ball traverses the orbits transversely is not always due to destruction of the optic nerves by their division, but may be due either to injury of the nerves, or to pressure from a fracture traversing the optic foramina. 3. If there is no evidence of brain-lesion, or of pressure of the ball upon one eye, as when it lodges in the posterior orbit, non-interference, except to meet indications as they arise, will give the best results. If, however, there is satisfactory proof, as shown by the telephonic probe, that the ball is lodged in the brain, trephining at the nearest point is indicated.

"LINTINE,"

A NEW ABSORBENT FABRIC, MADE OF FELTED ABSORBENT COTTON FIBRES, IN THIN SHEETS.

MORE ABSORBENT THAN COTTON OR LINT, AND A SUBSTITUTE FOR BOTH FOR ALL PURPOSES.

EVERY FIBRE THOROUGHLY CLEANSED, STERILIZED and ANTISEPTIC.

SOME ADVANTAGES.

NO WASTE. TEARS READILY. CLEANLY and COMPACT.

FIFTY PER CENT. MORE SURFACE THAN COTTON OR LINT. NO LOOSE FIBRES TO STICK TO WOUNDS OR CLOTHING.

Substitute for GAUZE, COTTON, LINT, BANDAGES, NAPKINS, TOWELS, SPONGES, CLOTHS, SHEETS, FILTER PAPER, MOSS, WOOL, PAPER, &c.

AN IMPROVED WOUND DRESSING.

USES FOR LINTINE.

Lintine deserves special notice as a valuable addition to Surgeons' materials. It is made by felting absorbent cotton fibres into thin sheets, forming a new and very absorbent fabric, with greater absorbency than cotton, and more advantages than either cotton, gauze or lint. There are no loose fibres to stick to wounds or clothing, it is ~~clean~~, compact, cuts or tears readily without waste, gives more surface than the same weight of cotton or lint.

As a substitute for the sponge in surgery it is pre-eminently useful. New sponges are expensive and not always safe. Sponges once used are a menace to success in operating.

Lintine makes a safe sponge at little expense, and can be fashioned in an instant into any size or shape required.

Lintine can be used instead of bandages as described by Dr. Brc in the Doctor's Weekly of March 26th, 1892.

"It is applicable in such cases as varicose veins, or where for any cause gentle and equable pressure is indicated.

"One of its advantages over the old method of roller bandage is, that a nurse or unskilled helper can easily be instructed to apply it, and it is less likely to slip down than the roller bandage. It also allows of greater freedom of movement.

"The limb or chest is covered by Johnson & Johnson's Lintine cut to fit, and neatly adjusted to the part; then cheese cloth or bunting is applied, and with a large needle and coarse, strong thread (double) the bandage is drawn together snugly. Another seam may then be run up to add to its pressure. If special pressure is desired, as over an inflamed knee joint, short gores may be run alongside of the knee."

Dr. L. B. Couch suggests the following method of using Lintine in the place of adhesive plaster for covering and closing wounds: "Cut a piece of Lintine half inch wide, and a half inch longer than the wound. The wound is then dabbed with iodoform collodion, and the Lintine strip laid over it. This dries quickly and holds the edges of the wound in coaptation. The whole may then be covered by a coat of collodion and the result is a perfect and smooth antiseptic dressing. By this method one is able to discard pins and sutures in many cases. Lintine makes a smoother and firmer dressing than anything I have ever used."

Lintine makes an excellent material for covering patients' limbs, the bedding, tables, &c., during an operation.

A strip of Lintine two feet long, and eight inches wide, folded together, so as to form a pad about eight inches square, will be found very useful as a dressing after laparatomies. Fashioned in an oval shape and saturated or made antiseptic with a fifty per cent. solution of Boroglyceride, it will make an excellent obstetrical pad for the puerperal state. Medicated in the same manner, it is excellent for the treatment of bed sores, ulcerated surfaces, etc. Cut into long strips, and wound into a ring, and secured in shape by a string necessary for its removal, it makes an excellent pessary. It is useful as a reliable antiseptic napkin, during menstruation, and for patients suffering from diseases of the genital organs. It is especially convenient for diapers for infants.

As a tampon in applying a gynæcological wash and in many other ways the gynæcologist can bring it into convenient use. For Napkins for the sick in cases of tuberculosis, scarlatina, diphtheria, cancer, it is especially useful. Small squares can be used and immediately after burned. Lintine is useful for making a pencil or mop for throat, rectal or vaginal applications or reaching cavities for absorbing drainage or emptying drainage tubes.

The usefulness of Lintine is almost unlimited.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Cholera Infantum. By E. Meinert, M.D., Dresden. Reprinted from the "Medical Annual," 1893. Pp. 18.

This able and instructive article is deserving of the closest and most attentive study at a time when Asiatic cholera is again threatening Europe, and when a premature summer of exceptional warmth and beauty has caused an outbreak of cholera infantum in our large towns six weeks before the usual time. We cannot do better than describe this fatal malady in Dr. Meinert's own words. He is describing an outbreak which occurred in the city of Dresden in 1886, when *within eleven weeks of warm weather* 10 *per cent of all children in Dresden under one year of age died*:—

"Children, generally healthy, suddenly became hot and restless, breathed irregularly, drank and perspired profusely, until they were attacked suddenly with vomiting or diarrhœa, or both, either together or one following the other. The diarrhœa discharge soon became watery, the skin, previously hot, cooled considerably, the voice became hoarse and afterwards whimpering, and often these symptoms were within a few hours followed by a considerable loss of flesh and weight. With or without convulsions children succumbed in a week on an average; many long before then, even on the first day. In 1886 also we found—and our similar investigations in 1887 confirmed it—that the greater part of the infants who died in the summer were the victims of a disease which showed so much resemblance to cholera as would make the name *cholera infantum* not altogether unsuitable."

In discussing the question of ætiology, Dr. Meinert points out that cholera infantum spreads within the walls of large towns in obedience to most unusual laws. It does not follow the waterways and thoroughfares; it does not regulate itself according to the height of the barometer or the depth of the subsoil water. It is unaffected by dampness or drought. Even inordinate density of population plays but a subordinate part in this disease. Dr. Meinert says:—

"In Dresden we came upon thinly-populated districts with a high, and densely-populated districts with a low, mortality. The different classes were nevertheless visited in a very different degree; 60·8 per cent. of the children who died in 1886 belonged to the working class; 23 per cent. to the middle class; and only ½ per cent. to the higher and educated classes; 15·7 per cent. were illegitimate.

"The epidemic broke out simultaneously in most distant parts of the town, and the several groups of cases could not be traced back to any common source of milk supply. The cow's milk was always given boiled. Nineteen children suckled at the breast and four hundred and sixty who were fed with cow's milk died of the malady. There was but one family in which two children (twins) died at the same time; in other families there was only one case. The number of illnesses and deaths was not influenced in any way by the *direction*, but to a great extent by the *strength*, of the wind. High temperature with a strong wind was not accompanied with any danger, compared with a moderately high temperature and no wind. The most numerous and serious cases arose on hot days with a minimum amount of movement in the air.

"These facts seemed to indicate that the key to the greater or less safety of certain streets and houses from cholera infantum was perhaps to be found in the greater or less freedom of access for the ventilating power of the wind."

The author proceeds:—

"It is a fact useful as concerning the subject, and highly satisfactory to myself, that, quite independently of Dr. Ballard, I have come to the same conclusion as that important investigator with reference to the influence of the wind, and of restriction of, and impediments to, the free circulation of air (about and within dwellings) in causing cholera infantum. Our researches also show the reason why *density of population* has not so direct an influence upon diarrhœal mortality as *density of buildings* (whether dwelling-houses or others) upon area."

Dr. Meinert, in a word, maintains that in the state of the dwelling-house we have a most important key to the right understanding of cholera infantum. In summer, as soon as the temperature of the outer atmosphere is balanced by the temperature of the air inside the dwelling, domestic ventilation is at once paralysed:—

"But if at the beginning of the hot season only an atmosphere can develop itself in the house, which becomes injurious to infants, why is it that cholera infantum prevails even during the three or four weeks after the fall of the high temperature. The closer stone dwellings stand together the longer do they retain the heat they have once acquired.

Since, moreover, the walls are built deep in the earth, and are, as it were, an appendix of the earth, and the temperature of the earth sinks more slowly than that of the air; at the return of cooler weather warmth is communicated to the houses from the earth. This explains the fact that the epidemic mortality, which first begins when the earth's temperature, measured to a depth of four feet, is 56° F. (according to Dr. Ballard) can prolong itself into the last quarter of the year."

As regards the differential diagnosis, Dr. Meinert shows that cholera infantum is distinguished from acute dyspeptic gastro-intestinal catarrh by its unquenchable thirst, by the suddenness of the collapse, by hollowness of the face (*facies cholerica*) arising from the rapid loss of serum, and by the uselessness of opiates.

Healthy and strong children more than others fall victims to the epidemics, not the weakly and dyspeptic, as is commonly believed. The investigations of Dr. Ballard and of Dr. Meinert have independently established this fact. The preliminary results of Dr. Ballard's researches will be found in the supplement to the Seventeenth Annual Report of the Local Government Board for England (1887–1888).

A study of the pathological anatomy of cholera infantum leads Meinert to the conclusion that "the pernicious summer diarrhœa is never the product of an enteritis, but depends upon paralysis of the bowels. Where enteritis is really found it is always secondary, and a result of an abnormally inflammatory transudation in the mucus of the stomach."

As regards its pathogenesis, in all probability cholera infantum is an intoxication. The poison, or a combination of poisons, appears to work on the medulla oblongata, for there lies the centre for intestinal secretion, vomitings, convulsions, respiratory and vasomotor phenomena.

When one considers the relationship which Dr. Meinert has proved to exist between the condition of the dwelling and cholera infantum, the fact that only at the end of the last century did the epidemic character of the malady attract the attention of physicians is easy of explanation:—

"Its spread was bound to advance with the same rapid steps as the development of modern large towns, and especially as the consequent want of proper housing for the working classes. The natural strongholds against the disease are the physiological nurturing of infants, and sufficient self-regulating domestic ventilation in hot weather. Countries in which the greater proportion of infants are artificially reared, and in

which, on account of the prevalent cold weather, no attention is paid to the situation of houses—these must be the predisposed homes of cholera infantum in the exigency of a hot season coming upon them unexpectedly. This is why the complaints against the devastating force of cholera infantum arise from the most temperate zones. In these zones lie those lands where a short hot summer succeeds a long and cold winter, and in which large towns assist the epidemic by means of closely-built high houses, and numerous workingmen's families. For this reason the United States of North America is the classic land of cholera infantum. The difference of the temperature between January and July, is in Africa 8·4° C., in South Australia 4·2° C., in Australia 13·0° C., in Asia and Europe 26·1° C., and in North America 28·4° C.

Dr. Meinert points out that in England results as unforeseen as they are extraordinary were arrived at concerning cholera infantum after the passing of the Public Health Acts. According to Sir Spencer Wells, Bart.,[a] people were astonished to find that the *infant mortality* in those large towns which had shown particular diligence in carrying out the Acts sunk to quite an unexpected degree:—

"In all countries of the temperate zone, infant mortality is measured by the intensity of the summer epidemic, and the number of deaths from the cholera infantum. The explanation of the astonishing figures is easy. By the destruction of whole districts a number of those houses were removed in which cholera infantum had till then found its home, and by the erection of well-ventilated new buildings, an equal number of dwellings were placed on the site of the old ones, in which cholera infantum could not take root. The main business of professed hygiene with reference to this devastating disease is contained in these facts."

In the preventive treatment of this child-pestilence, everything will depend on enlarging the child's powers of resistance:—

"Parents will understand us best if we remind them of all they themselves are accustomed to do in order to make life bearable in their sultry dwellings. They dispose of all articles of clothing which are not absolutely necessary; they wash more often than usual; they change their underclothing more frequently; move their limbs about; change their position, sitting or standing; lie in bed half exposed; throw themselves from one side to the other, even in sleep; and lastly, eat less and drink more. It will be our duty to tell people how prudent this instructive behaviour of their's is; that the infant, if he could make himself understand, would express the wish to be able to be similarly treated; and

[a] Brit. Med. Journal, Oct. 4, 1890.

what in this respect are the duties required of the parents to the child during the hot weather."

In the matter of curative treatment, we must remember that enormous losses of water—in sunstroke more through perspiration; in cholera infantum more through diarrhœa—empty the vessels, till at length, when the disproportion between the room in the vessel and the contents has reached a certain degree, the heart ceases to beat. From this it is seen that *indicatio vitalis* for treatment is to replace the water which has been drawn from the blood and tissues:—

"Water given in quantities in cholera infantum is equally effective against both diarrhœa and vomiting. The sooner you begin to give water, and the more violent the discharges are, the more prompt will be the result obtained. In the first stages of the malady the effect is obtained almost immediately. Against the ordinary dyspeptic diarrhœa this procedure does not have much effect, for the very reason that thirst, which makes it possible to manage it, is entirely absent. In *cholera nostras* of grown up people, on the other hand, it proves as effective as in cholera infantum. Dr. Fiedler, in Valparaiso, my former assistant, has observed many proofs of it. In both diseases water given in a sufficient quantity is the *analepticum par excellence;* so that one is astonished to find that patients, who seem to be on the verge of death, are in their full strength after one or two days. They also wholly escape the secondary enteritis, if they are treated in good time (*i.e.*, when in the state of paralytic catarrh) which is unfortunately the case. As for the rest, these little patients must be treated in exactly the same manner as soldiers suffering from sunstroke. In the first place they must have a cool douche or bath, be carefully taken into the fresh air, and only lightly dressed. In the stadium algidum, a hot bath should be resorted to."

Dr. Meinert ends his excellent contribution to the *Medical Annual* with a particularly apt remark. "Neither," says he, "is it enough that doctors should know how to struggle with cholera infantum. In Dresden, about a half of the cases of the disease died without ever seeing a physician; and when a doctor did visit a child he usually found him dying. Let medical men no longer be of divided opinions as to what is the best treatment for cholera infantum, then *their next care will be to show mothers how they can help themselves.*"

In this connection, we may point out what an influence for good in controlling the prevalence of and mortality from cholera infantum

the Queen's Jubilee Nurses, who are doing such a noble work in the artisans' dwellings and tenement houses of our large towns, could exercise by conveying to the mothers in their districts the information as to treatment which Dr. Meinert gives in his article.

Modern Homeopathy: Its Absurdities and Inconsistencies. By WILLIAM W. BROWNING, A.B., LL.B , M.D.; Lecturer upon and Demonstrator of Anatomy, Long Island College Hospital, &c., &c. Philadelphia. 1893. Pp. 32.

THIS pamphlet won the prize of one hundred dollars offered by Dr. G. M. Gould, of Philadelphia. It is complete for its purpose, and might have borne for motto, "Thrice he slew the slain;" but it will never reach the country clergyman nor the Lady Bountiful who cures all diseases with sugary nothings; and however conclusive may be, to ordinary minds, such a demonstration of the "absurdities and inconsistencies" of the modern Hahnemannic cult, we fear that the mind of the amateur homœopathist is impervious to argument.

Is it worth while at the present day to go back to *The Organon of the Healing Art*, and to illustrate its crudity and irrationality? Is it fair to laugh at the modern homœopathic practitioner because Hahnemann's *opus magnum* is so ridiculous as to make us doubt of the author's sanity? These are questions less simple than they seem. On the one hand, we have the International Hahnemann Association declaring, in 1880, that the Organon is "the only reliable guide in therapeutics;" that, consequently, homœopathy "consists in the law of similars, the totality of the symptoms, the single remedy, the minimum dose of the dynamitized drug—and these not singly but collectively"—and resolving, 'That, as some self-styled homeopathists have taken occasion to traduce Hahnemann as a fanatic, as dishonest and visionary, and his teachings as not being the standards of homeopathy to-day, that we regard all such as recreant to the best interests of homeopathy." So far as this section of the school is concerned, we are justified in throwing fragments of the Organon at the heads of its practitioners. On the other hand, there is abundant evidence, in this pamphlet and elsewhere, that a large—probably the larger—section of modern homœopathists practise very much as we do ourselves, many of them

openly repudiating the law of similars as an exclusive guide to treatment, and, either openly or covertly, abandoning infinitesimal dosage. With Dr. Browning's help we shall deal briefly with both divisions of the homœopathic sect. So far as Hahnemann's own teaching is concerned, we shall confine ourseves to homœopathy proper. It is well known that in essays published subsequently to the Organon he propounded views of which it is difficult to speak seriously. Let the one notorious example suffice. He taught that the *acarus scabiei* is "the only fundamental cause and source of pains of every variety." In the Organon the leading principles laid down are:—That *similia similibus curantur;* that "all that a physician may regard as curable in diseases consists entirely in the *complaints* of the patient and the morbid changes in his health *perceptible to the senses;*" that every drug before taking a place in the pharmacopœia should be administered to healthy persons, and its effects carefully observed and recorded; that one drug only should be administered, and that no local or external applications should be employed. Strange to say, the infinitesimal dosage, which is in most minds an essential feature in homœopathy—so that "homœopathic" has come to mean "infinitesimal" in common speech—is an after-thought of Hahnemann's. *Similia similibus curantur,* adopted from Paracelsus, was at first his sole therapeutic principle. Drugs are to be administered "in moderate quantities;" but, "to disclose the wealth of their latent powers, are to be taken in highly attenuated state." Hence, it is laid down that smelling homœopathic remedies, or "inhaling them in the form of vapour emanating continually from a dry pellet impregnated with a highly rarified medicinal solution, and contained in a small vial," is of great efficacy. He tells us of a preparation of gold, "so developed that a quadrillionth part of a grain may be put in a vial, and, if a melancholy person, whose disgust of life has brought him to the verge of suicide, will breathe it but a few seconds, in one hour he will be relieved from the wicked demon, and restored to a relish of life." An English disciple found, "after many years of anxious experimentation," that homœopathic medicines contained in closed vials, held in the hand, are specially efficacious.

The doctrine of similars is not intrinsically absurd. It was considered applicable to some diseases by Hippocrates, and Paracelsus adopted it. It is almost inconceivable, however, that any rational being can knowingly accept the doctrine of infinitesimal therapeutics, the other hinge on which homœopathy turns. As a

matter of fact, few of the regular practitioners do; and even the benevolent busybodies who cure every disease, from cancer to itch, with pellets of milk-sugar, can scarcely be aware of the nothingness of their medication. The "first potency" of a drug soluble in alcohol contains one drop of a strong solution in a hundred, the second one drop in a hundred of the first; so that the thirtieth—which Hahnemann laid down as the best for ordinary use—contains a decillionth of the mother tincture, a quantity represented by a fraction of which the numerator is 1 and the denominator 1 followed by 60 cyphers. If the drug is a solid, insoluble in alcohol, it is triturated and mixed with milk-sugar. The third trituration becomes soluble in alcohol, on some occult principle unknown to chemists, and is treated as before. A bottle is two-thirds filled with globules of milk-sugar, "the 'potency' dropped into it, the bottle corked and shaken so that they are all equally moistened. It is then turned upside down and left standing for from nine to twelve hours. After this time the cork is loosened to allow the liquid in the neck of the bottle to escape. The globules are, in a few days, dry and ready." The Organon tells us that their virtue will remain unimpaired for twenty years, which we believe without difficulty. We have the authority of the *Encyclopædia of Materia Medica* for believing that *smelling* the thirtieth potency of aloes produces the following effects:—

"In the afternoon of the fourth day he works with a will without a mid-day nap. Toward the evening of the fifth day he is uncommonly aroused by inspiriting, joyful news. On the eighth day he has cold feet all night, sleeps little, though ordinarily he is sleepy in the evenings. This same day a pustule which had formed on the edge of his upper lip, left side, healed. On the ninth day he had extremely painful tearing stitches in the second joint of the left forefinger. On the tenth he has a longing for juicy food, fruit, but not for water. On the eleventh he has canine hunger, and after a meal becomes sleepy. In the afternoon of the twelfth day he is uncommonly thirsty, has a swashing and gurgling in the bowels, audible to him, and in the evening is inclined to work. On the thirteenth day he has a pale, sickly look. In the afternoon of the fourteenth, on walking in boots, he gets a pain in the right little toe, as if frozen. In the morning of the fifteenth he lies till towards eight o'clock. On the seventeenth the concave edges of the teeth, which have had a yellowish cast for many days, seem sharp and hurt the tongue."

It almost seems as if some of these symptoms might have

appeared even if the patient had not smelled the thirtieth dilution of aloes.

Much is said to depend upon the mode in which the attenuations are prepared. Mere dilution, even carried to an extreme, will not confer the extraordinary power which homœopathic medicines possess. In this respect, unfortunately, modern followers of Hahnemann do not follow him. He laid down that each successive dilution should receive only *two* shakes; having begun with *ten*, and found the result too potent. "One drop," he says, "of tincture of moor-grass of the thirtieth potency, each potency having received twenty shakes, put in jeopardy the life of an infant to whom it was given, while the same medicine, when each dilution has received only two shakes, will cure the disease early and promptly." The *American Homeopathic Pharmacopeia*, on the other hand, directs that each attenuation of a liquid preparation should receive "ten powerful downward strokes of the arm;" and that each potency of a dry substance should be ground in a mortar for exactly eighteen minutes and scraped together again for twelve. The *North American Homoepathic Journal* allows every man to shake his potencies as much or as little as he pleases; Jenichen shook his arsenicum most powerfully one and a half million times, counting as a genuine shake "only such as produced a metallic ringing sound of the glass bottle;" Boericke and Tafel content themselves with twelve strokes.

However essential to true homœopathy this childish doctrine of dilution and potency may be, there can be little doubt that the modern homœopathic practitioner, even while professing to follow Hahnemann, has abandoned infinitesimal dosage. Dr. Browning gives an instance from his own experience:—

> "Not long since the author was called to the bedside of a young lady, who was under treatment by a prominent homeopathist. He discovered that, among other things, she was taking, under his direction, 20 grains of quinine a day, occasional 10-grain doses of antipyrin, and 10 drops of Fowler's solution of arsenic every four hours. The patient was then suffering from arsenical poisoning, of which she shortly afterwards died."

Some do not even pretend to follow the great teacher in this part of his doctrine. Our author quotes from *The Homeopathic Times* of 1878:—"The heresy of high dilution should have no place in our creed nor home in our school, if we desire to advance and expand our influence, and secure for it public regard and

confidence, because it cannot be demonstrated by any known method that either medicinal power or presence exists in the exalted attenuation." And from Dr. Kidd: "I have cast aside dynamized drugs *in toto*, as untrustworthy and unjust to the sick."

At the annual meeting of the Philadelphia County Medical Society, held 24th May, 1893, the President, Dr. John B. Roberts, delivered an address on "Points of Similarity between us and Homœopathic Physicians." His last sentence contains his thesis, and shows that conciliation is his object. "In the course of five or six decades," he says, "mutual observation and gradual deviation from our respective original standards have brought us and the homœopathists so near together that the similarities quite outnumber the dissimilarities." He shows, by quotation from homœopathic authorities, "that few homœopathic practitioners now believe in the augmentation of the medicinal power of a drug by diminishing the quantity administered. Hahnemann's assertion of the increasing potency of these infinitesimal doses seems to have lost its supporters among homœopathic practitioners." The latter believe in the law of similars as no more than a useful indication of a remedy, "often, perhaps very often," but hold themselves free to treat many diseased conditions without reference to Hahnemann's primary law. We cannot better illustrate how "far gone from original righteousness" is the ordinary homœopathic practitioner of the present day than by the following quotation, made by Dr. Roberts, from the *Homœopathic News* for March, 1892. This organ of Homœopathy boldly states in an editorial article:—

"We venture to assert that had not our school drifted away from the practice of forty years ago, it would have been dead and buried long since.

"We have drifted away from the practice of giving a pellet of the two-hundredth or higher, and waiting thirty or sixty days for its curative effects; from the prescribing of a high dilution by smelling the dry pellets, those same pellets 'grafted' by shaking a thousand pure pellets with one medicated by the ten thousandth.

"We have drifted away from a belief in provings made by taking a single dose of the one-thousandth, thirtieth, or third even, and then recording all the symptoms felt by the prover—natural symptoms, colds, diarrhœa, &c., for the next sixty days!

"We have drifted away from the carrying a pocket repertory to the bedside of the patient, and recording the symptoms in columns, and a weary search in said repertory until a mechanical similimum was found.

"We have drifted away from the days when our pseudo-surgery was a disgraceful farce, when we expected silica to open a felon, or hepar sulphur to lance an abscess.

"We have drifted away from the narration of miraculous cures with the highest attenuations, which were not cures at all, but a spontaneous finale of a self-limited disease.

"We have drifted from the days when our practitioners would sit by the bedside of a woman dying of uterine hæmorrhage, hunting in a repertory for the 'indicated remedy,' while the vital fluid was ebbing away, without recourse to the tampon or ergot."

The Leeward Islands Medical Journal, being the Proceedings of the Leeward Islands Branch of the British Medical Association. 1892. Vol. II. Edited by H. A. ALFORD NICHOLLS, M.D., F.L.S.; Ch. M. Aberdeen; M.R.C.S. Eng.; Corresponding Member of the New York Academy of Sciences. London: J. & A. Churchill. 1892. Pp. 156.

IT speaks well for the enterprise and fraternity of the members of the profession in the Leeward Islands that, scattered as they are in eight islands, or groups of islands, they maintain a branch of the British Medical Association. It speaks well for their influence and persuasive powers that they can have their Proceedings printed in London, bound in cloth, and published by Messrs. Churchill at the expense of Government. Volume I., which we noticed on its appearance, cost £40. It was gently hinted that the Branch might refund part of this sum, but the suggestion was received with unanimous disapproval—excusably, inasmuch as the credit balance amounted, at the close of 1891, to only £5 17s. 2½d.

We marked a few of the papers for brief notice. Dr. Pierez reports a case of puerperal fever which he treated successfully with the oil of *Eucalyptus globulus* (in three-minim doses dissolved in a tincture and diluted), after quinine and iron had failed. During the lady's illness her fowls took to dying, two, three, or four daily. Dr. Pierez traced the mortality to a tub of water, in which clothes, &c., from the patient were steeped, and from which he saw fowls drinking. It should be added, however, that this theory was not favourably received at the meeting. The late Mr. A. P. Boon briefly described an epidemic of jaundice which prevailed amongst the coloured population in the months of June, July and August. The negro's confidence in European medicine, generally strong, fails, it appears, when jaundice is concerned. He

prefers to treat it with decoctions of his own brewing. In this instance, the epidemic being mild, no harm was done. The ætiology is very obscure. The author suggested that the causative poison was of fæcal origin—insanitary conditions having free play in the Negro quarter. Of the thirteen papers contained in this volume, Dr. Freeland's on "Chyluria" is the longest. It is an excellent description of this remarkable parasitic disease.

Carlsbad: a Medico-Practical Guide. By EMIL KLEEN, M.D., PH.D. The Knickerbocker Press: G. P. Putnam's Sons. 1893. Pp. 101.

LIKE many others of its kind, this book suffers from the attempt to combine two incompatible things—a guide to doctors as to what patients to send to Carlsbad and a guide to patients what to do at Carlsbad. Each object is to a great extent fulfilled, but the "blend" is not satisfactory. The information for patients at Carlsbad is given in a full and interesting manner, and numerous useful hints are included. The questions of expense, choice of lodgings, excursions, and soforth, are well treated. In the more medical parts the author holds some views which differ from those of other writers on Carlsbad. For instance, he considers that anæmia is not a "contra-indication against a cure in Carlsbad," and he does not forbid patients taking simultaneously mineral waters of different kinds.

The author apologises for imperfections of style and language, caused by having had to write in a foreign tongue, but the lapses are very few, and the diction is easy and clear.

The Dental Profession. By HENRY SEWILL. London: Baillière, Tindall, & Cox. 1893. Pp. 36.

A PAMPHLET describing the development and present position of dental surgery. It contains much that is interesting, but surely the author is going a little too far in claiming that dentists are injuring their own financial prospects by putting down quackery; certainly few medical men will consider the following anything but a one-sided way of looking at the medical aspect of the matter:—"Now, of these classes of invalids, with ailments manufactured or aggravated by quackery, the vast majority in the end gravitate into the hands of qualified men, and thus money which

would not otherwise be earned is put into the pocket of the profession." Many of the cases treated by quacks are pretty well plucked before they pass on to the medical profession.

Fiftieth Annual Report of the Managers of the Utica State Hospital, for the Year ending September 30, 1892. Albany: James B. Lyon. 1893. Pp. 73.

THE hospital for the insane of New York State is situated at Utica, and the official Report of the institution for its fiftieth year, ending 30th September, 1892, is before us. Its insane population averaged 811, ranging from 865 to 775—206 were discharged, 87 cured, 43 improved, 68 unimproved, and 8 "were not insane." Deaths were 80. The recovery rate was 25·66 per cent. of admissions, 30·42 per cent. of discharges, and 10·72 per cent. of average population. The proportion of recoveries is lower—"evidence of growing scruples against labeling as recovered patients whose mental poise has not been entirely re-established." The percentage of deaths was 9·86 of average population, 7·12 of total treated. No evil effects had resulted from the association of the sexes at meals, which, on the contrary, had produced "observance of better table manners, a neat personal appearance and greater decorum generally." Fifty-nine per cent. of the male patients were in one month employed in useful work; in another, 66 per cent. of the females, the average for both sexes being 54·19. Eleven trephining operations were experimentally performed on epileptics. Recovery from the effects of the operation was rapid. In some cases there was temporary improvement in mental condition—permanent in none.

As to habits:—"Of the 345 persons admitted during the year, 26 men and 4 women were habitually given to intemperance; 52 men and 12 women were moderate drinkers; 51 men and 10 women were addicted to the use of tobacco; 1 man and 1 woman were cases of the opium habit; 36 men and 133 women did not use alcoholic stimulants, tobacco or opium in any form; and the habits of 7 men and 12 women were unascertained." As to causation:—Of 345 cases admitted 32 were attributed to intemperance in drink, 3 to "intemperance in drink and influenza," 2 to "intemperance in drink and opium," 4 to excessive use of tobacco, 15 to masturbation. Of 87 patients discharged recovered, 32 had been insane not more than three months. Of 345 admissions,

New York State contributed 220, Ireland 49, Germany, 22. The Rules for Admission, as settled by the State Laws, are given at the end of the Report. The certificate must be signed by two physicians "under oath;" but within five days of confinement the certificate must "be approved by a judge or justice of a court of record of the county or district in which the alleged lunatic resides," who can, if he thinks it necessary to his investigation, call in the assistance of a jury. A physician signing such certificate must be of reputable character, a graduate of some incorporated medical college, a permanent resident of the State, and shall have been in the actual practice of his profession for at least three years"—these qualifications being certified by a judge of court of any record. Finally, "it shall not be lawful for any physician to certify to the insanity of any person for the purpose of committing him to an asylum of which the said physician is either the superintendent, proprietor, an officer, or a regular professional attendant therein."

Public Health Laboratory Work. By HENRY R. KENWOOD, M.B., including contributions by RUBERT BOYCE, M.B. London: H. K. Lewis. 1893. Pp. 491.

To deal with public health laboratory work in such a limited space much has to be omitted and much condensed. As a rule this is well done, the condensation not lessening the clearness, and the more important processes being retained. It is hardly correct to say that successful prosecutions under the Food and Drugs Act are extremely rare in connection with alcohol. Convictions for selling gin below the limit of strength have frequently been obtained. The only test given for alcohol is distilling and taking the specific gravity; there is no other test for the presence of alcohol, which is an omission, considering the number of "non-alcoholic" drinks sold which are not always above suspicion.

In the plate illustrating "Objects commonly found in impure water (and air)," there are some curious subjects figured. Vorticella, for instance, is not likely to be found except there are algæ present, which will be much more obvious; and hydra, although it may turn up in a sample of water, is unlikely to be present unless there is a large supply of vegetable and animal matter present; if it does turn up the illustration will not give much assistance in identifying it. Some of the other illustrations, also, are poor; if the description "Nest of beakers" was removed from

Fig. 9, the cut might be circulated as a puzzle. On the whole, however, the Handbook can be safely recommended as convenient, useful, and accurate.

A Treatise, Practical and Theoretical, on Cancers and the Cancer Process. By HERBERT SNOW, M.D. London: Churchill. 1893. Pp. 384.

THE author of this work starts with a general view of his subject. He points out that every cancer (among which he includes, as we shall see, sarcomata and other malignant growths) is but a mass of actively-growing cells, the product of pre-existing cells which they resemble as children do their parents. They offer, however, certain peculiarities by which they differ from their progenitors. They are larger, have larger nuclei, are more numerous and more liable to degeneration. They multiply with enormous vigour and rapidity, not only disproportionately to the surrounding tissues but actually at their expense, diverting their nutriment, and eroding and, as it would seem, devouring them.

The two main features of malignancy are, first, this progressive erosion of surrounding parts; and second, the infectivity of the new cells, by which they are able, when carried to distant parts, to cause metastasis, which may become secondary centres for further diffusion:—

"The conclusion is forcibly presented to us that the excessive cell-multiplication which we still find to characterise all malignant lesions, combined with the hostility of the morbid elements to the healthy, is but a process of devolution, of reversion by cells to a primordial amœbiform condition, in which they become parasitic, or rather autositic. Inasmuch as the nervous system was not only the controlling agency by which transformation of embryonic cell-units into more or less specialised tissue originally took place; by means also whereof the healthy balance of component elements is maintained through the somatic life of the organism; it further seems permissible to regard this 'cancer process' as essentially consisting in a local 'cell-rebellion,' certain cells casting off their allegiance to the central authority."

The parasitic theory of cancer is considered to be in the highest degree impossible:—

"No suspicion of propagation by contact exists; there is no relation to climate or soil; no considerable number of persons become a prey to

cancer in any single place; even experimental inoculation from one animal to another is rarely successful.

"From these considerations, regarded in combination with the microscopic and clinical features which are seen to attend the progress of every cancerous malady, the conclusion follows that, in our present lights, cancer is not introduced from without but is the product of agencies within; that no microbic parasite is to be sought, but that the cell-elements of the body, under the influence of some mysterious force, themselves become autositic."

This reversion of cells to an autositic condition always begins only at one point. If there are two cancers in the body one is always secondary to the other. Much of the difficulties which attended the recurrence of cancer after removal, and which apparently gave some support to the theory of a constitutional origin of the disease, has been removed by the discovery by the author of an infection of the bone marrow, where cancer germs may lie dormant, like resting spores, and eventually, after months or years, may pass into the blood and give rise to multiple metastasis and death. Dr. Snow expresses the strongest disbelief in heredity as a factor in cancer-production, but ascribes the cell proliferation to neurotic cancer—a view which is borne out by the frequency with which cancer follows mental distress and anxiety. So strongly does he hold this opinion that he speaks of "the generation of cancer solely by distress of mind" as a matter of every-day experience. To this he attributes the increasing prevalence of cancer which all statistics show.

While women are twice as prone to cancerous disease as men are, this pre-eminence is due altogether to the frequency with which the sexual organs, breast, and uterus are affected in women. Men and women suffer with equal frequency from cancer of the rectum, abdominal viscera, extremities, and external genitals, while men are more frequently affected by cancer of the face, tongue, mouth, œsophagus, bones, lymphatic glands, bladder, and larynx.

The following is the classification of cancer adopted, which, it will be seen, includes much not ordinarily called cancer:—

I. *Epithelioma.*—Derived from the epithelial cells of the epidermis, or of the mucous membrane, whether squamous, columnar, or transitional.

II. *Carcinoma.*—Derived from the epithelial cells of acinar secreting glands.

III. *Sarcoma*—Generated by the cells or corpuscles of the connective tissues.

IV. *Lympho-carcinoma.*—Derived from the cells of the various lymphoid-tissues, principally from those contained in the lymph-glands.

V. *Cylindroma.*—Derived from the cells of tubular gland follicles, and histologically constituting an aberrant reproduction of tubular gland-structure—practically a variant of epithelioma.

VI. *Rodent Ulcer.*—A cancerous reproduction of hair follicle structures originating in the cells of the outer root sheath—also a modification of epithelioma.

VII. *Endothelioma.*—Generated by endothelial cell-plates—a rare and obscure form of cancer.

VIII. *Myosarcoma.*—Springing from the nuclei of organic muscle film.

IX. *Blastoma.*—The cancer of vestigial residue.

From these genera, species arise by degeneration or higher development. Of these examples are to be found in colloid carcinoma, melanotic cancer, osteoid sarcoma, myxoma, chloroma. There are, besides, rare tumours, many of which lie on the borderland of cancer, and only occasionally display malignancy, such as thyroid cancer, Billroth's plexiform sarcoma, xeroderma pigmentorum, granuloma fungoides, cheloid, intracystic vegetations, carcinomatous and sarcomatous, fibroma molluscum, rhabdomyoma, and psammoma.

In a chapter on causation the author argues strongly for the neurotic origin of malignant growths. He points out the frequency with which cancer follows mental distress, and the rarity with which idiots or lunatics are affected by malignant disease, and gives a table in which the malignant diseases are classified into (*a*) those generated by mental distress as the direct and sole exciting cause—this group includes carcinoma only; (*b*) those directly produced by mechanical agencies, but towards which depressing emotions appear to predispose—these are epithelioma, sarcoma, myosarcoma, lymphosarcoma, cylindroma, melanotic sarcoma; and (*c*) those in which the presence of no neurotic element has so far been ascertained; this group includes the other species and varieties given above under classification.

A somewhat remarkable account is given of the formation of the well-known epidermic peculi so common in flat-celled cancer or

epithelioma. The centre of the mass consists of a group of cells filled with mucoid fluid, around which the other cells are concentrically arranged and compressed so as to have a fibrous appearance. The starting-point is never a single cell, but always a group of cells. The whole thing is compared to a myxoma on a small scale, and its formation attributed to the tendency with which the cells have to secrete a mucoid fluid. In accordance with this it is stated that the peculi are "comparatively small and ill-defined" in cancer of the skin, while they attain their greatest development in cancer of the mucous membrane. The whole of this is, we think, contrary to general experience and to what is known of the normal evolution of the cells of squamous epithelioma.

An interesting account is given of the infection of the bone marrow, more particularly that which occurs in carcinoma of the breast:—

"The adjoining *humerus* is ordinarily the first to become implicated. At a period subsequently to enlargement of the axillary lymph-glands, the upper epiphysis becomes tender to the touch, and seems, on careful comparison with the corresponding bone on the opposite side, to be somewhat enlarged. Concurrently the patient complains of aching pain down the back of the arm. There is no real thickening of the bone, the apparent enlargement being due to an irritative hyperæmia of the periosteum, which may eventually disappear. Later on, the *sternum* at the junction of the upper with the middle portion begins to show undue prominence, and very gradually bulges. This 'sternal symptom' is hardly ever noticed by the patient; it causes no pain or inconvenience, rarely ever tenderness; it is only noticeable when the person is erect; disappears, or nearly so, when one is lying down. It may be simulated by natural conformation of the part; it occasionally, but not often, ultimately proceeds to a distinct tumour formation; it is explicable on the ground of a gradual infiltration and decalcification of the bone by malignant cells, whence a ready yielding to pressure when the thorax is held erect."

The infection of the humerus takes place through the lymphatics, the current in which is often altered or even reversed owing to obstruction by cancerous growth. The infection of the sternum is also by the lymphatics, but indirectly. The cell particles are brought to the remains of the thymus gland, which never totally disappears; there they grow and infiltrate the bone by direct contiguity. Deposits in distant bones are due to general blood infection dependent on that of the marrow.

Secondary infection of the bone marrow in other malignant

diseases than carcinoma of the breast occurs, but always gives rise to tumour or fracture.

In the second part of the book the clinical peculiarities and morbid anatomy of the various species of cancer are detailed *seriatim*, and the descriptions are illustrated by a large number of plates.

The third part gives an account of cancer in special organs, with its most appropriate treatment.

The sole curative method of treatment consists in the removal of the peccant cells. But it is urged that with the operation the proper treatment of the case is only commencing. If a partial operation only can be performed, burning instruments—actual cautery, galvanic cautery, Paquelin's cautery—are far preferable to the knife, as the former are less apt to be followed by rapid growth of the part left behind. Caustics and electricity are condemned. The most remarkable part of this chapter on treatment are the paragraphs on the use of opium:—

"Upon malignant lesions the continued administration of opium, or of its derivative morphia, appears to exert a direct and conspicuous retardative action, materially checking the cell growth in both primary tumour and in its secondary metastasis. Thus, in mammary new growths, taken as the most open to observation, we find an atrophic condition often brought about by the early and persistent administration of these medicines. The breast tumour commonly diminishes in size, shrivels, refuses to ulcerate, progresses either not at all or at a very low rate. The metastatic deposits, if present, long remain stationary. Not only is the patient's mental comfort enhanced, pain obviated, the vital powers sustained, several years of fairly enjoyable life thus procured, but there is an improvement in the objective phenomena, which can be attained by no other possible method of treatment. Tonics are but *placebos*; neither sustaining strength nor checking the ravages of the disease.

"Whenever the perfect eradication of a cancerous growth is hopeless, treatment by small, gradually increased doses of opium or morphia should be immediately instituted, and steadily persisted in until the close; *this, with the object of holding the disease directly in check*, and not merely of alleviating symptoms. To withhold opium from the importunate sufferer until pain necessitates its use, is a barbarity which cannot be too emphatically condemned. After any operation, which will probably be followed by re-appearance, it is expedient to promptly induce an opium or morphia habit."

PART III.

SPECIAL REPORTS.

REPORT ON SURGERY.

By R. Glasgow Patteson, M.B. Univ. Dubl.; F.R.C.S.I.; Assistant Surgeon and Surgeon in charge of the Skin Department, St. Vincent's Hospital.

SYNOPSIS:

No brilliant or epoch-making advance has marked the twelve months of surgical history that have passed. But if that is true, it is equally true that in many directions theories are being tested by the touchstone of experiment, and everywhere experimental pathology is becoming the handmaiden of scientific surgery. It is this multiplicity of paths in which surgical progress is travelling which makes it at the present time so difficult to single out those subjects that are likely to possess the greatest interest for the largest number of readers. The daily increasing mass of surgical literature both at home and on the Continent, but pre-eminently at the present time in America, renders it more and more an impossible task to endeavour to digest the raw material and furnish ready-made the nutrient food.

I. ACUTE TORSION OF THE SPERMATIC CORD.

In the *British Medical Journal*, April 9th, 1893, Mr. Gifford Nash reports a second case of strangulation of the epididymis due to torsion of the spermatic cord, which differs from the one previously reported by him in that reduction was effected without operation. The patient was a lad, aged nineteen, who had spent the afternoon

in athletic exercises, and shortly afterwards began to feel out of sorts. He went to bed, and soon complained of pain in the right testicle, which was later followed by vomiting, a feeling of faintness, and collapse. When seen the testicle and epididymis were very tender and, the latter especially, somewhat swollen. There was no urethral discharge, and the external abdominal ring was normal. About an inch above the body of the testis there was a tender lump connected with the cord, and the epididymis lay in front of the body of the testis. Reduction was effected by rotation of the epididymis to the patient's right after rotation in the reverse direction had proved ineffectual. The pain immediately was relieved, and in a short time the swelling of the testis and epididymis had disappeared. Previous cases have been recorded by Mr. Nash, Mr. Bryant, Mr. Davies Colley, and Mr. Herbert Page. In all the cases the patients were young, the ages ranging from fourteen to nineteen. In the three first cases there was an incompletely descended testicle involved; in Mr. Page's case there coexisted an inguinal hernia; but in the present case the parts were perfectly normal. In all the previous cases the true condition was recognised only by an exploratory operation. In Mr. Bryant's paper, read before the Royal Medico-Chirurgical Society in 1892, he referred to this as "a hitherto undescribed affection," and suggested the probability of many of the cases of atrophy of the testicle, hitherto supposed to be due to some obscure inflammatory process, being in reality cases of atrophy due to torsion of the spermatic cord. Mr. Bryant apparently regarded an "incompletely descended condition" of the testis as an essential factor in torsion of the cord; but this view requires modification in the light of subsequent cases in which this anatomical abnormality was not present. And further, undoubtedly many cases of atrophy occur in which the testicle had long prior attained its usual situation. There is an important link in the chain of evidence wanting, but nevertheless the suggestion is a valuable one as opening up a new field for observation, and supplying a possible explanation of the mode of origin of some of these cases, hitherto admittedly obscure.

II. STRANGULATION OF THE INTESTINE FOLLOWING OPERATION.

At a meeting of the Surgical Society of Paris (*Revue de Chirurgie*, 1892) M. Lucas Championnière brought forward the histories of six cases of this occurrence in order to show, in oppo-

sition to a view previously put forward by some members that the diagnosis of post-operative strangulation was simple, that in his cases—in some of which the strangulation was acute, while in others the obstruction was gradual—the diagnosis was not simple, but involved in many obscurities. In the first case ovariotomy had been performed with general diffuse peritonitis as a complication. All went well for eight days, when symptoms of strangulation set in. The abdominal wound was reopened, and dense fibrous adhesions were found to exist between numerous loops of intestine and a large mass of omentum. These bands were divided, and the patient recovered. In the remaining five cases the operations had been performed for various kinds of hernia—in one for the radical cure of an epiplocele. The contained omentum was found to be gangrenous, and was removed in the usual way. On the eighth day symptoms of strangulation supervened. Abdominal section revealed a loop of intestine adherent to the belly wall. This was freed, but behind it was found an omental abscess, which was opened and washed thoroughly clean. The patient made a good recovery. Two other cases were operations for the radical cure of adherent herniæ. In one the patient's life was saved only by a second laparotomy at the end of a month and the establishment of an artificial anus. The other patient died with symptoms of strangulation, but without surgical intervention during the author's absence, and the autopsy showed strangulation by a peritoneal band which would have been capable of being easily remedied. The fifth case was also a radical cure of an epiplocele. The patient got up without leave on the eighth day. Subsequently a gradual diminution was noticed in the number of motions passed, ending finally in total suppression, with the formation of a tumour on the side opposite to the site of operation. This was cut down upon, and was found to consist of a large effusion of blood causing obstruction. The patient recovered. In the sixth case—one of strangulated hernia—all went well until the eighth day, when symptoms of acute obstruction developed. The abdomen was opened, and a loop of intestine was found adherent to the anterior abdominal wall—so adherent that the parietal peritoneum had to be pulled off to set it free. The patient recovered. In reviewing these cases M. Lucas Championnière directed attention to the difficulties of diagnosticating between (*a*) a true strangulation, (*b*) an obstruction, and (*c*) a fæcal retention due to intestinal paralysis—all three conditions giving rise to the common

symptoms of obstruction of the lumen of the gut and fæcal vomiting. A point of interest in this remarkable series of cases is the almost absolute uniformity in the period at which symptoms of obstruction showed themselves—viz., on the eighth day. So that we may for the future be on the look out for any of these conditions until after that period has passed. One other lesson they teach, and it is one that surgeons will do well to remember—in all cases of operation on the intestinal area where obscure symptoms manifest themselves during the first ten days, the imperative necessity of eliminating doubt and affording relief where possible by early reopening of the abdominal wound where one exists, or the prompt performance of an exploratory laparotomy. The results obtained by M. Championnière will inspire confidence and hope in future operations.

III. SALINE FLUSHING AFTER LAPAROTOMY.

In dealing with the prevention of intestinal paralysis and obstruction after abdominal operations M. Championnière, on the same occasion, said that in order to eliminate this puzzling factor in diagnosis he was in the habit of pushing to an extreme the practice recommended by Mr. Lawson Tait, and of purging every case of laparotomy freely, and that within two or three hours after the operation was completed. Since adopting this practice he has ceased to be troubled with the rises of temperature and the gastric embarrassments which formerly gave such trouble in cases treated with opium. In the discussion which took place M. Terrillon expressed his entire approval of the method of purgation, but he deferred it to a later period—the second or third day. If there is any rise of temperature the drug employed is sodium sulphate, in order to procure rapid evacuation; otherwise calomel was invariably used. Since adopting this line of treatment he had not to deplore any of those accidents which used to be most frequently met with in those cases in which opium was freely used. Some dangers of the method were referred to by MM. Berger and Terrier. The former instanced a case in which he lost an old woman who had been operated on for strangulated hernia by giving her a purgative on the fifth day. A small perforation was found in part of the strangulated loop, which was surrounded by evidences of recent adhesions which had been broken down by the excessive intestinal peristalsis. M. Terrier's case was a woman operated on for salpingitis to whom a purgative was administered

on the third day. Fæcal extravasation took place through a small intestinal fistula which had become secondarily established. Without advocating or believing in the necessity for such wholesale "saline flushing" as M. Championnière adopts, no doubt now exists as to the value of the method under certain conditions; and it may be remarked that the cases adduced in opposition to the practice are by no means conclusive, as these are accidents that must always in the nature of things happen from time to time, and might and do equally occur without the administration of any purgatives whatever.

IV. THE OPERATIVE TREATMENT OF MAMMARY CANCER.

One of the most striking facts in the natural history of disease during the past fifteen or twenty years has been the continuous and enormous increase in the number of deaths from cancerous diseases. That this is due not merely to more accurate registration and to the earlier recognition and more precise differentiation of the malignant diseases is shown by a cursory examination of the figures available. For if such discrimination by separating into their proper groups cases of sarcoma and of carcinoma increased the sum total of malignant disease, it should by separating the varieties lessen the relative proportions of either group; but, on the contrary, we find that, while more accurate discrimination is evident, the number of cases returned as "cancers" is out of all proportion increased. Furthermore, it is the experience of most metropolitan surgeons that the number of cases sent up from the country for operation has markedly increased during recent years; and this corroborates the testimony of many country practitioners that whereas in numerous districts cancer was formerly a rarity it is now a disease of everyday occurrence. In view of this greater prevalence it is a question of paramount importance for surgeons to endeavour to make their operations as radical and curative as possible.

Clearing out of the axilla has now become such a recognised and routine procedure with all progressive surgeons that it is hardly necessary to insist on the supreme importance of its being thoroughly carried out in all cases even where careful examination fails to find any evidences of glandular infection. A still more extended method of operating has been recently advocated by Dr. Robert Weir, of New York (*Medical Record*, December 31, 1892). Basing his arguments on the statistics of Schmidt, founded on the

cases observed in Küster's clinic in Berlin, which showed that "twenty-six per cent. of the cases not presenting, previous to operation, axillary involvement to the usual palpation revealed enlarged glands at the time of operation," he lays down as a starting-point the two following axioms :—

"1. That every mamma in which a cancerous nodule exists is already very extensively diseased—perhaps *in toto*.

"2. That secondary infections take place either through the axillary glands and lymphatics, or through the adjacent skin; or, lastly, through the retro-mammary fat and fascial tissues alone, or, in addition, through the lymph-vessels of the pectoral fascia and of the pectoralis major muscle itself.

"From these facts it is equally evident that the whole breast must be removed, and that the section through the skin must be made wide of the growth, irrespective of the formation of a line of subsequent union; also, that the axillary contents should be thoroughly cleaned out; and finally, and perhaps most important, if the disease extends to the depths of the gland, that the pectoral fascia and generally a portion of the pectoralis major muscle itself must be removed." In order to determine at the time of operation whether the portion of skin removed is free from the infected area he recommends the making of a fresh frozen section during the performance of the operation by a competent microscopist in order that the surgeon may be sure of his ground before closing the wound, or, as an alternative method, the nitric acid test as applied in the surgical clinic in Edinburgh. "This is an important point, because it is admitted by all that the recurrences are most common—viz., seventy per cent.—in the skin and in the tissues near the site of the original infection. It is for the further avoidance of this recurrence (for in the axilla recurrence is rare—less than 2 per cent.) that, in addition to the liberal removal of skin, Heidenhain, of Berlin, has proposed that always in the deep involvement of the mamma, or when the retro-mammary fat or tissue is invaded by the neoplasm, not only these tissues should be widely removed, but that a goodly portion of the pectoralis major muscle itself—in his own words, 'a continuous layer of the muscle substance'—should be cut away." In proceeding to describe the operation of clearing out the axilla the author lays stress on an important rule not sufficiently insisted on—to expose the axillary vein at the beginning of the procedure. If this simple step is carried out we have at once the seat of greatest danger under

view, so as to keep it out of harm's way; or, in case of accident, so as to have it immediately under control. And here the writer refers to another point first duly emphasised by Küster—the importance of, if possible, seeing and avoiding the second and third subscapular nerves, as their severance is the common cause of the subsequent inability to raise the arm after these operations. This brings us to the important addition to the operation practised by Dr. Weir. "To lend further security," he proceeds, "to the clearing out of the axilla, an expedient which I have employed now for many years should, in my judgment, be always resorted to. It is to explore higher up in the axilla that space, called by the Germans Mohrenheim's, situated just below the clavicle. This is accomplished by separating with the fingers the cellular plane between the pectoralis major and pectoralis minor muscles, until the clavicle is felt, and then by flexing the arm somewhat upon the chest the pectoralis major muscle itself is lifted up by the fingers of an assistant or by a retractor. By so doing, this space, containing the axillary vessels and a small amount of fat, is readily exposed to view and to palpation. In it will often be found, if enlarged glands have been met with in the axillary fat, one or more small-sized carcinomatously involved glands. With the fingers, and sometimes the end of a curved blunt scissors, not by cutting, this fat can be entirely removed. If any difficulty in so doing occurs, the finger passed underneath the pectoralis minor muscle will crowd this fat sufficiently forward to bring it entirely within the control of the surgeon. I venture to repeat that this is a region the exploration of which I have for a long time insisted upon as being of great importance. Its investigation has not usually been dwelt upon, but I cannot but feel that its systematic examination will lend additional security to the patient. The separation of the two pectoral muscles likewise often reveals a diseased lymph-vessel running alongside the cephalic vein."

This certainly appears to be a distinct advance in the treatment of that class of cases where numerous small enlarged glands occupy diffusely all the axillary fat—those cases, in other words, in which glandular recurrence is most frequent. But it may be objected to such an extensive addition to an already extensive operation that it must gravely add to the severity of the procedure and minimise the patient's chances of recovery from the surgeon's knife. On this point the author must speak for himself:—"Of one hundred and twenty-five primary operations conducted in

this manner I have not had a single death. . . . Dennis in seventy-one cases had but one death. Schmidt's later cases showed but two per cent. of mortality." As to the radical nature of the operation and the prognosis as to life:—"Twenty per cent. of the cases operated on are reported by Schmidt as cured; twenty-five per cent. of similar cures are given by Dennis. My own data give me in sixty traced cases nearly twenty per cent. of cures. By this is meant that no recurrence has taken place within three years from the date of the operation, a generally received indication of a permanent successful result, though not an absolute one."

Such an array of figures as this disarms criticism, and the results obtained more than justify, they commend to others the intrepidity of this advance in the treatment of cancer of the breast.

V. RELAPSING TYPHLITIS AND APPENDICITIS.

In an interesting paper in the *British Medical Journal*, April 22, 1893, Mr. Frederick Treves details a series of fourteen cases treated by operation. Adopting the general term "typhlitis" for the sake of convenience he divides cases of the disease into two groups—*a* when commencing in the cæcum, and *b* when commencing in the appendix. The former class is much more rarely met with, and is due to some ulceration of the mucous membrane which has proceeded to a depth sufficient to induce peritonitis. "By far the commonest form of ulcer, however, which is found associated with this particular variety of typhlitis is the stercoral ulcer." This lesion is produced by the mechanical and chemical irritation of long-retained fæces, or of masses of undigested food." And operation has demonstrated that these conditions may give rise to well-marked symptoms quite apart from any inflammation of the appendix. In the second class of cases (those commencing in the appendix) Mr. Treves arranges the anatomical conditions into four groups. 1. *There has been moderate torsion of the appendix.* This is a natural result of the scanty mesentery of the appendix, so that torsion or bending of the process interferes with its blood supply through the mesentery, and so produces engorgement, with, it may be, occlusion of the tube at the point of bending. This occluded portion becomes distended with a muco-purulent or purulent secretion, with probably some ulceration of the mucous membrane. 2. *There has been extreme torsion of the appendix.* In this variety gangrene results. The gangrene may be very acute, involving the whole process, or it may be limited to the points of

torsion, the appendix being held together by sloughing segments. 3. *A foreign body has lodged in the appendix.* This is usually stated as a frequent cause, but Mr. Treves explodes this fallacy. "In 146 examples of trouble in the appendix Matterstock found a foreign body in 9 instances only." 4. *A primary ulceration of the appendix exists.* "In this connection may be mentioned the ulcer of tuberculosis, and the destructive process associated with actinomycosis." No definite symptoms can be associated clinically with these various forms.

As regards the question of operation Mr. Treves is progressive, but at the same time conservative. Recognising that many cases get well without surgical intervention he wisely decries wholesale operation. "I am aware," he writes, "of many cases in which a patient has had three or more attacks of typhlitis, and has then ceased to be troubled with any further outbreaks. In some examples of the relapsing form much can be done by medical means, by diet, by attention to the bowels, and by placing the patient under conditions more favourable to a state of peace within the abdomen. . . . The following are the more important circumstances which would justify an operation, and in all the cases with which I have dealt one or other of the subjoined conditions has been present:—

"1. The attacks have been very numerous. (In one of the author's cases there had been nineteen relapses.)

"2. The attacks are increasing in frequency and severity.

"3. The last attack has been so severe as to place the patient's life in considerable danger.

"4. The constant relapses have reduced the patient to the condition of a chronic invalid, and have rendered him unfit to follow any occupation.

"5. Owing to the persistence of certain local symptoms during the quiescent period there is a probability that a collection of pus exists in or about the appendix.

"I have never operated in any case in which I have not been able to make out the enlarged appendix still in evidence after the acute symptoms have passed away."

Mr. Treves then describes in detail the steps of the operation as practised by him, and for these we must refer the reader to the paper as published. As an instance of the complications likely to be met with it may be mentioned that adhesions were found between the appendix and the omentum, the ureter, the iliac

artery, the cæcum, the bladder, the ileum, and the rectum, while in one case the process was found lodged in the inguinal canal.

In the same number of the *Journal* Mr. Gilbert Barling gives an analysis of sixty-eight cases of appendicitis treated at the General Hospital, Birmingham, since 1885. Of this total only five (3·4 per cent.) relapsed. Of these, four ultimately recovered under treatment; "the fifth was operated on and died." But Mr. Barling qualifies this formidable statement by remarking that this operation was done before the procedure was put upon its present sound surgical basis. As to the cases that require operation the author divides them into three groups:—

"1. Those in which pus can be diagnosed with something like certainty.

"2. Those in which, from the acuteness of the symptoms, perforation or gangrene of the appendix may be regarded as imminent if it has not already occurred; and

"3. Those in which prolonged rest, blistering, &c., fail to prevent relapse"

In the *Medical Record*, March 18, 1893, Dr. Ball, of New York, also publishes a series of twelve cases of "chronic relapsing appendicitis." He adopts this term, suggested by Talamon, to distinguish this group from cases of "recurring appendicitis." The two are thus differentiated. "In the latter the attacks recur at long or irregular intervals, and are followed by periods of good health. Each attack is an independent affection. While it undoubtedly predisposes to a recurrence, that event may never occur. In the former (chronic relapsing appendicitis) there is no return to absolute good health; there are always such evidences of disease of the appendix as local pains or discomfort (increased on exertion), tenderness, tumour; and to these are added the frequent exacerbations of acute inflammation. Several attacks of recurrent appendicitis often induce the other condition of chronic appendicitis with relapse." As regards the conditions requiring operative interference Dr. Ball travels very much on the lines we have quoted above from Mr. Treves. "In addition to the history of repeated attacks," he writes, "eight cases have presented evidences of disease of the appendix in the presence of a tumour in the iliac fossa, varying somewhat in its position and the distinctness with which it could be felt. The tumour was more distinct the nearer the time of examination approached the subsidence of the last attack. In four cases there was no tumour, but

a tender area corresponding roughly to the point emphasised by M'Burney as of diagnostic value. [Midway between the anterior superior spine of the ilium and the umbilicus.] Once only the loin was tender. But all the patients without a distinctly palpable tumour had a history of continuous discomfort, or pain on exertion, with or without irregularity in the action of the bowels. Four patients were never entirely well after the first attack. . . . Two patients were unwilling to travel, convinced by previous experience that this pleasure would be frequently interrupted, and apprehensive of the increased severity of future attacks; six patients were unable to pursue business or laborious occupations, or to go to school without frequent abdominal discomfort. The duration of the disease had extended over a period from one to ten years, covering a number of attacks from two to twenty or thirty." In the majority of these cases the appendix was found adherent to the cæcum or to the omentum and cæcum combined, and was frequently embedded in new-formed tissue, the result of previous chronic inflammatory processes.

As regards prognosis in Dr. Ball's series there was one death, due to peritonitis on the twelfth day. The paper concludes with a table giving reference to 76 cases (including these now reported), with 75 recoveries and 1 death. So that, judging from the results now obtained, when the mode of operating is definitely laid down and careful asepsis preserved, it would appear that removal of the vermiform appendix when threatening recurrent danger is one of the recognised and most successful procedures of modern surgery.

VI. LITTRÉ'S HERNIA: A HISTORICAL NOTE.

So much confusion exists as to what is really meant by a "Littré's hernia" that no excuse is needed for transcribing a few sentences from Mr. Jonathan Macready's recently published "Treatise on Ruptures," the most exhaustive work dealing with the subject with which we are acquainted. Writing of Partial Enterocele he says:—" There are no words in English, equivalent to the German Darmanhangsbruch and Darmwandbruch, to distinguish the hernia of Meckel's diverticulum from that of a part of the intestinal wall. Partial enterocele, which was one of Richter's terms, implies a limitation from which the German name is free. But in the absence of a more exact nomenclature, the term partial enterocle will be used here to denote protrusion of part of the intestinal wall. The first formal notice of this con-

dition is given by Lavater in his Essay on Strangulation in 1672. . . . Littré observed this condition, in 1714, in a ventral hernia above the umbilicus of a woman who died of strangulation of part of the transverse colon. He had previously, in 1700, described this rupture, but used as illustrations two cases which have been since recognised as herniæ of Meckel's diverticulum. Littré, however, raised the question of their congenital origin, and dismissed it as too improbable. Herniæ of Meckel's diverticulum are called by Professor Albert after Littré; but he was not the first to demonstrate this hernia, nor does he seem to have been aware that diverticula of the intestine can exist independently of hernia. These diverticula (Meckel's) were known to Ruysch (1698). Both of these herniæ were known to Morgagni, who, in 1741, carefully distinguished between the two, and notes a case of his own in which part of the ileum was intercepted, and in which fatal strangulation ensued. Therefore to Lavater, Littré, and Morgagni more properly belongs the discovery of the partial protrusion of the intestinal wall, and to Ruysch and Morgagni that of the herniæ of Meckel's diverticulum. Mr. Treves has followed Prof. Albert in confining the term 'Littré's hernia' to that of Meckel's diverticulum, and (transported, probably, by admiration for Richter) has called after his name the herniæ with partial protrusion of the intestine. . . . Sharing to the full the admiration for Richter which is felt by those familiar with his writings, I do not find in his discourse on 'small herniæ,' as he called them, such excellence as would justify disregard of those who preceded him."

It is to be hoped that this admirable summary of the literature will now finally determine the vexed question of proprietary rights, and perhaps this multiplicity of names will satisfy to the full those who love to grub for surgical "authorities" in the alleys and byways of history.

(*To be continued.*)

THE INDIAN MEDICAL RECORD.

We observe with pleasure that our young eastern contemporary is well into its fourth volume, and wears that comfortably thick outer garment of non-professional material which indicates prosperity. The contents of the number before us are interesting and varied. Indian medical periodicals, often depending for success upon a personality in favour of whose removal are many chances, rarely live long. There have been exceptions; and the *Indian Medical Record* bids fair to be one.

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PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

Waterborne Cholera.[*] By **Ernest Hart**, M.D., Editor of the British Medical Journal; Chairman of the National Health Society.

The thesis which I am here to present to you is one which has a superficial air of triteness, but it is not our value to be affected by superficialities, and I hope to convince you that although well worn, the subject of the causation and prevalation of cholera is by no means threadbare. At any rate, to such threads of this well worn subject as have survived attrition, there lie attached untold thousands of lives, which it may be yours or mine at any moment to save. My thesis is that cholera death is a violent death, an unnatural death, a preventable death; that the very existence of epidemic cholera, not to say endemic cholera, is a reproach to the nation and to the community in which it exists. Being a violent death, its prevalence is due to ignorance or apathy, which, from the dimensions of a blunder, easily develops into the proportions of a gigantic crime. Cholera deaths can be prevented, ought to be prevented; and, as I firmly believe, have been largely diminished by agencies to which medical men have pointed and will, in our lifetime, and therefore before long, be so wholly prevented that Asiatic cholera like the Asiatic plague, the bubonic pest and their more modern correlative, typhus fever, will become extinct among European nations, and survive only among the records and relics of an historic shame. You will perhaps hardly be surprised, even although you may not yet be prepared to accept my view of the facts, if I begin by saying to you what I hope to end by proving, that epidemic cholera can only be diffused where the water supplies of the community are poisoned with a specific poison, which we had recently identified as the cholera bacillus. That identification I believe to be correct, but the correctness of it is not necessarily associated with the true interpretation of the historical facts of the case. It, however,

[*] An Address delivered before the Forty-fourth Annual Meeting of the American Medical Association, held at Milwaukee, Wis., June 7, 1893.

concurs with them. The independent evidence which it supplies, strengthens our appreciation of clinical records of cholera infections and cholera outbreaks, in the past and the present. But its more or less of error or incompleteness, if such there be, does not prevent our correctly interpreting the epidemic and clinical histories which are inscribed upon the scrolls of cholera literature.

There still survive some of the old notions which half a century ago—indeed much more recently—attributed cholera to the operation of "telluric" and "meteoric" influences. "Atmospheric" and "pandemic" waves, "cholera blasts," and other mysterious agencies, are happily now becoming things of the past, though eminent writers are still to be found who discuss the spread of cholera from the point of view of some "general influence" or "choleraic influence," to the obscuring of other agencies which the overwhelming evidence of past epidemics has shown to be of superior and more practical importance. Even as recently as the great Russian epidemic of 1892, a clever English, though happily non-medical, writer (Hall Caine), referred to "the cholera insect which flies across the frontier," and I have been gravely apprised from one or two quarters of "blue mists," and "plagues of flies," such as were observed during previous cholera epidemics.

Ideas of this sort may, perhaps, be pardonable among such unenlightened communities as last year destroyed the cholera hospitals hastily provided at Astrakhan and Saratoff to receive the victims of the advancing scourge, and cruelly maltreated the doctors who, in the midst of superstition and filth, were battling with its subtleties. But it is desirable to put aside these theories; or leave them for academic discussion, and to deal with the spread of cholera practically in the light of the accumulated evidence afforded by all the great epidemics of the past. That accumulated, and unhappily still accumulating, evidence clearly shows that cholera is a filth disease carried by dirty people to dirty places, and there spread by dirt and the use of dirty water. It is well to take every means of impressing this fact on the popular mind, and to use it as a powerful lever to push forward the war against filth already so well begun. We should aim at securing purity of our water, our air, our soil, and our habits. This achieved, cholera need no longer be feared. But it is a herculean task, and must in many countries, where filth, so to speak, is endemic, be slow of accomplishment. Even in our own country, the Augean stables requiring to be cleansed are still far too numerous. There are still far too many villagers and even townspeople throughout England who are more than satisfied with the polluted wells which have served their ancestors without bringing them to a premature grave. Water supplies are still too frequently obtained from contaminated rivers, and filth nuisances of every description are still too common amongst us. But to cherish and seriously discuss theories

respecting "cholera influences," "epidemic waves," and so forth, is to retard the work of sanitary reform, and to render it more difficult of successful and speedy accomplishment.

Ever since Snow in 1849, with the shrewdness of genius and the confidence of conviction, propounded his belief that the consumption of polluted water had had a great deal to do with the spread of cholera in England, each succeeding epidemic in this country and elsewhere has furnished overwhelming evidence of its truth. For my own part, the deductions of Snow, confirmed as they were by the elaborate investigations of Farr and Simon, were always conclusive; but since 1866, when I was personally instrumental in tracing the disastrous cholera epidemic of that year in East London to the distribution of unfiltered and polluted water from the Lee during several days by the East London Water Company, I have been convinced that specifically polluted water is not merely an occasional or adjuvant cause, but the *causa causans* of almost every great epidemic of Asiatic cholera. Further, when the use of the poisoned water has been abandoned or cut off, the epidemic has ceased.

I have closely watched each successive disastrous cholera outbreak which has occurred within the last thirty years, and the facts have practically, without exception, clearly borne out this contention, and strengthened my robust faith in it. The neglect of prompt and complete investigation of the whole circumstances of many of the foreign epidemics have rendered it impossible in some cases to learn all the facts; but where full investigations of the facts have been made by competent inquiries, the result has in almost every instance been remarkable in the confirmation afforded of the diffusion of cholera by water.

(A) ENGLISH EXPERIENCES.—EPIDEMIC OF 1831–33.

In England, cholera first appeared in October, 1831, and between that time and the summer of 1833 it ruthlessly ravished various parts of the kingdom. No accurate history of the epidemic exists, and there are no reliable statistics respecting it, as the present system of registering the causes of death had not been established. But in places in Great Britain having an aggregate population of less than 5,250,000, the deaths of 31,376 persons, and in Ireland of 21,171 persons, were reported through various channels to the board of health. In London alone, which then contained a population of little more than 1,500,000, there were 13,144 cholera attacks, and 6,729 deaths during eighteen months; that is to say, one person out of every 117 was attacked by the disease, whilst one in every 250 died. The epidemic filled the people with consternation, and took the medical profession by surprise. Its characteristics were unfamiliar and unaccountable, and its extension was so sudden and mysterious that it was popularly looked upon as a visitation of Provi-

dence beyond human control. According to the *Annual Register* of 1832, "the cholera left medical men as it had found them—confirmed in most opposite views, or in total ignorance as to its nature, its cure, and the causes of its origin, if endemic, or the mode of transmission if it were infectious." This, perhaps, is rather a severe criticism; for although all that we now know of its habits had not then become clear, the new disease was carefully studied, and much was learned of its characteristics. A consultative board of health was established, and the privy council circulated rules and regulations which, though far from complete, contained much sound advice. It was pointed out that the disease had special affinity for the poor, ill-fed, unhealthy parts of the population, especially those of drunken, irregular life, and those districts which were unclean, ill-ventilated and crowded. General cleanliness was enjoined, the provision of special hospitals was advised, and strict quarantine was sought to be enforced. But the most active medium of its epidemic extension—namely, water—seems to have received little thought. Whether water played a conspicuous part in the 1832 epidemic cannot be proved to demonstration, as attention was not then directed to that phase of the subject. But the general circumstances of the water supplies of the country were such as to favour the diffusion of cholera once introduced; and incidents collected a few years later by Dr. Snow [a] respecting the distribution of the disease in 1832 in London, Newburn, Newcastle, Nottingham, Exeter, and elsewhere, lead to the presumption that, as in subsequent epidemics, contaminated water played its part.

The sanitary condition of these islands at that period was very different from what it is at the present day. Unprotected wells, leaky cesspools, and filth nuisances of every description abounded, for the age of sanitary reform had not then commenced.

THE EPIDEMIC OF 1848–9.

The epidemic of 1832 set men thinking, and gave a great impetus to sanitary reform. Before the next great invasion of this country by cholera in 1848, a growing tendency towards improvement in sanitation was distinctly noticeable. In September, 1848, cases of cholera occurred in Hull, and were soon followed by outbreaks at Edinburgh, Leith, Sunderland, and elsewhere. It rapidly overran the whole country, and before it had disappeared in epidemic form towards the close of 1849, 53,293 of the English people had died from it, and 18,887 had died from diarrhœa, out of a population of some 17,564,656 living in a great variety of circumstances. It was in August, 1849, whilst this epidemic was running its course, that Snow [b] cast a strong light on the spread of cholera

[a] On the Mode of Communication of Cholera. By John Snow, M.D. 1854.

[b] Pamphlet dated August 29, 1849, On the Mode of Communication of Cholera. By John Snow, M.D.

by propounding his theory that a most important way in which the disease may be widely disseminated is "by the emptying of sewers into the drinking water of the community." As far as his inquiries had extended he had found that in most towns in which the malady had prevailed to an unusual extent this means of its communication had existed. He pointed out, for instance, that the joint town of Dumfries and Maxwelltown, not usually an unhealthy place, had been visited by cholera both in 1832 and at the close of 1848 with extreme severity. On the latter occasion the deaths were 317 in Dumfries, and 114 in Maxwelltown, being 431 in a population of 14,000. The inhabitants drank the water of the Nith, a river into which the sewers emptied themselves, the contents floating afterwards to and fro with the tide. Glasgow, which had been visited severely with the malady, was supplied with water from the Clyde, by means of an establishment situated a little way from the town higher up the stream, and the water was professedly filtered; but, as the Clyde is a tidal river in that part of its course, the contents of the sewers would be washed up the stream and the supply of water could not be altogether free from contamination. Again, he pointed out that in 1832 the cholera was much more prevalent in the south and east districts of London, which were supplied with water from the Thames and the Lee where those rivers were much contaminated by the sewers, than in the other parts of the metropolis, differently supplied. And this he observed was precisely what again occurred in 1849. It may here be mentioned that in 1849, and for a few years later, none of the London water companies obtained their water higher up the Thames than Vauxhall bridge, above which point the river received an ever increasing amount of sewage.

But apart from the water companies, there were a great many pumps supplied by wells in use in the metropolis. On investigating a sudden and severe outbreak of cholera in Surrey Buildings, Horsleydown, Dr. Snow found that a certain well in use by the patients had been exposed to direct pollution by the dejections of earlier patients. A very similar state of affairs was found at Albion-terrace, Wandsworth-road, where a number of cholera cases occurred almost simultaneously. In that instance there were no data for showing how the disease was probably communicated to the first patients, "but it was two or three days afterwards, when the evacuations from these patients must have entered the drains having a communication with the water supplied to all the houses, that other persons were attacked, and in two days more the disease prevailed to an alarming extent." This explanation of the outbreak was disputed at the time, but Dr. Snow pointed out that "the only special and peculiar cause connected with the great calamity which befell the inhabitants of these houses was the state of the water, which was followed by the cholera in almost every house to which it extended, whilst all the surrounding houses were quite free from the disease."

His theory of the whole epidemic of 1848–9 was that the cholera matter was brought to London by patients from Hamburg, that it was multiplied by infected persons, that the infectious sewage matter found its way partly through soil into the wells, and partly through sewers into the Thames and Lee, from which a portion of the water supply of London was derived. This theory was adversely criticised in a report by Drs. Baly and Gull to the London College of Physicians in 1850; and as Mr. N. C. McNamara has well remarked in his valuable Treatise on Asiatic Cholera, "these physicians well-nigh nipped this doctrine in the bud; had there been less truth in it than there is, their unqualified and positive condemnation of this theory would have utterly crushed it. As it is, their opinions have done much to retard the progress of our knowledge of the etiology of cholera."

EPIDEMIC OF 1853–54—THE BROAD-STREET PUMP.

Dr. Snow had not long to wait for an opportunity of putting his theory to the test. In the early part of the summer of 1854 cholera had obtained a foothold in London. One special outbreak which occurred in the parish of St. James, Westminster, during that epidemic, is almost of historic importance, as it was the first instance in which the agency of water as a disseminator of cholera was clearly demonstrated. The outbreak was a good illustration of what occurred all over this country during the earlier cholera epidemics, and of what I regret to say occurs at the present day in India and elsewhere. The first death in the parish was recorded early in August, and throughout that month a few deaths were recorded each week. But during the week ending September 2, seventy-eight deaths were registered; in the next week there were 287 deaths, in the following week there were sixty-seven, and then the mortality as quickly subsided as it had risen. But before it had disappeared at the beginning of November, some 700 fatal attacks had occurred in this single parish; that is to say, twenty-two out of every 1,000 persons living in the parish had died of the disease within three months. In the excitement of the moment various causes were assigned for this mysterious and sudden outburst. Some accused the ancient pest field in the parish, where during the Great Plague the dead had been buried by the hundred, of casting forth the disease germs buried there nearly 200 years previously. Others laid the blame on the unflushed and defectively ventilated sewers; whilst others again found sufficient cause in the extreme heat of the weather. But no satisfactory solution of the mystery presented itself until Dr. Snow was called in to examine the water supplies.

On studying the record of the deaths, Dr. Snow found that nearly all of those registered in the first week of the outbreak had taken place within a short distance of the parish pump in Broad-street; and that of seventy-three deaths in the locality around this pump, sixty-one were

found to have been of persons who used to drink the water from that particular pump. Pursuing his inquiries, he found that in a factory in the neighbourhood, where the water was always used, eighteen out of the 200 workpeople died. On the other hand, in an adjoining brewery in Broad-street, where water from that pump was never used, not one of the seventy workmen employed suffered from the disease. In another case a gentleman came from Brighton to see his brother, who was attacked by cholera in a house near the pump. On his arrival he found his brother dead, but he did not see the body. He remained only twenty minutes in the house, and after partaking of a hasty lunch, including some brandy and water (the water being from the Broad-street pump), he proceeded to Pentonville, where he was attacked by cholera during the following day, and was dead within twenty-four hours. In another case, a lady living at Hampstead was in the habit of having brought to her daily a large bottle of water from the Broad-street pump, as she had a preference for it, the water being both cool and sparkling, as sewage polluted water often is. The water was taken to her as usual on August 31; she drank of it, was seized with cholera on the next day, and died within twenty-four hours. A niece who was on a visit to this lady also drank of the water, returned to her residence in a high, healthy part of Islington, was attacked with cholera and died also. In all these cases the water was used cold and unboiled. Had it been boiled before use its peculiarly sparkling character, which constituted its attractiveness, might have been sacrificed, but its dangerous properties would have been destroyed. Many dismal incidents such as these were discovered both by Dr. Snow and by the Rev. Mr. Whitehead, who conducted an independent investigation, and showed the complicity of this well water with the outbreak. On following up the clue it was found that the pump immediately adjoined the house No. 40 Broad-street, and on the drains of that house being opened, a filthy condition of things was disclosed. There was a cesspool under a common privy within three feet of the well, and at a higher level than that of the water in the well. The walls of the cesspool were rotten, and the contents could leak into the surrounding soil. The walls of the well were also found to be rotten, and there was distinct evidence of the cesspool contents having for a long time leaked into the well. Further investigation also disclosed the fact that on August 28 a child aged five months, living in this house, was attacked with what was registered as diarrhœa, and died on September 2. The symptoms of this child's illness, however, were distinctly choleraic.

This ghastly experiment fortunately bore good fruit. The more practical of our sanitarians realised its bearings, and the purity and protection of our water supplies received more attention. The first step was the abolition in the metropolis of such dangerous shallow wells as that in Broad-street; wells which, in the words of Sir John Simon,

contained evidence that "they represented the drainage of a great manure bed."

But the water companies also needed much reform, for it was now evident that they had unconsciously been trying gigantic experiments with the lives of Londoners. In 1856 Mr.—now Sir John—Simon, who was at different times a member of the committee for scientific purposes appointed to investigate the nature and circumstances of the cholera epidemics, medical adviser to the General Board of Health, and medical officer of the Privy Council, had in his reports described very fully the relations of the water supplied by the London water companies with the epidemics of cholera. He showed in 1856 that as often as Asiatic cholera had been epidemic in London it had been observed to prevail with especial severity in certain localities on the south side of the Thames—in St. Saviour's, St. Olave's, and St. George's, Southwark, and in Bermondsey, Newington, Lambeth, Wandsworth, Camberwell, and Rotherhithe.

The water supply of these districts was divided between two companies—the Lambeth and the Southwark and Vauxhall. In 1853 the former company drew their water from the Thames at Thames Ditton, having recently, in conformity with the requirements of the Metropolis Water Act of 1852, moved their intake from Hungerford bridge; the latter company, however, still drew their supply from the Thames at Battersea. The former company, pumping from the higher and cleaner part of the river, furnished as good a water as any then distributed in London; while the latter, pumping from Battersea, was purveying perhaps the filthiest stuff ever drunk by a civilised community.

Microscopical and chemical observations proved the almost incredible foulness of the water supplied by the Southwark and Vauxhall company. It was not only brackish with the influence of each tide, but was contaminated with the outscourings of the metropolis, swarming with infusorial life, and containing unmistakable molecules of excrement. Bearing these facts in mind, the following figures, culled from the records of the cholera epidemic of 1854, are more than suggestive:—

In the 24,854 houses supplied by the Lambeth company, comprising a population of about 166,906 persons, there occurred 611 cholera deaths, being at the rate of thirty-seven amongst every 10,000 living. In the 39,726 houses supplied by the Southwark and Vauxhall Company, comprising a population of about 268,171 souls, there occurred 3,476 deaths, being at the rate of 130 out of every 10,000 living. Thus the population drinking dirty water appears to have suffered three and a half times as much mortality as the population drinking other water, although in many localities the mains of the two companies ran side by side through the streets, and the supplies of the two companies were so interlaced that it was not possible to define accurately their respective limits,

or even to say that the whole of the houses in any particular street were supplied by one particular company.

The significance of these contrasts is made more evident by a glance at the records of the preceding epidemic of 1848–9. At that time the Lambeth Company drew their water from the Thames at Hungerford Bridge, and were supplying even a worse water than the Southwark and Vauxhall Company. As already mentioned, in 1853 611 cholera deaths occurred amongst the customers of the Lambeth Company, but in 1848 1,925, or three times as many deaths, had occurred among the same set of customers, who were, however, then drinking water from a more polluted part of the river. On the other hand, the Southwark and Vauxhall Company not only did not secure a pure source of water between 1848 and 1854, but in the latter year were distributing an even stronger solution of sewage matter than during the earlier epidemic. One is justified in inferring, therefore, that of the 8,476 tenants of the Southwark and Vauxhall Company who died of cholera in 1853–4, two-thirds would have escaped if their water supply had been like that of their neighbours, and that of the much larger number—tenants of both companies—who died in 1848–9 also two-thirds would have escaped if the Metropolis Water Act of 1852, with its stringent provisions prohibiting the abstraction of water from the Thames below Teddington Lock after August 31, 1855, had but been enacted a few years earlier.

EPIDEMIC OF 1866.

The next invasion of this country by cholera was in 1866, and it is memorable for the terrible experiment which was unconsciously carried out by another of the London water companies, at the expense of some 4,000 lives in East London. The disease appeared in London in the last week of June, when six deaths were registered. During the succeeding weeks there were 14, 32, 346, 904, 1,053, 781, 455, 265 deaths, and then the mortality gradually declined, but before the first week of December 5,915 deaths had been registered. Of these, 4,276 occurred in the east districts of the metropolis and adjacent suburban districts of West Ham and Stratford. It was in these districts that the rapid and unexampled development of the outbreak occurred.

Early in the outbreak I was struck by its incidence on the area supplied with water by the East London Water Company, and I felt confident it could only be due to a sudden specific pollution of the water supply. Acting on behalf of a great medical journal I despatched the late Mr. J. Netten Radcliffe (who had not then become attached to the medical department of the Privy Council) to investigate the matter. At first, of course, he was met with a blank denial on the part of the water company that anything had occurred in connection with their water supply which could explain the distribution of cholera; a refusal to accept any such

denial, and a patient investigation, in which the officials gave all necessary aid, though under protest, at last made it plain that owing to changes having been made in their filtering apparatus the company had sent out for a few days unfiltered water, or water in a very partially filtered state, direct from the river Lee. Subsequent inquiry proved that just at that moment the waters of the Lee had been infected with choleraic discharges from a cottage whose sewers were connected with the river, and in which a family had come to reside who had reached Southampton infected with cholera, and were allowed to pass on after they were supposed to have recovered. The whole history of this outbreak is set out in great detail in Mr. Radcliffe's report, included in the appendix to the ninth report of the medical officer of the Privy Council. Mr. Radcliffe thus summarises the more prominent questions arising out of the outbreak :—

"The outbreak in the metropolis was one of a succession of phenomena which indicated a widespread diffusion of cholera infection in the kingdom during the month of June, 1866, and this diffusion was inseparably connected with a direct dissemination of the infection from the continent. Although facts are not forthcoming which would establish the direct dependence by transmission of the recent outbreak upon the outbreak previously occurring in Western Europe, the conclusion does not follow legitimately that no such dependence existed. . . . The earliest unquestionable cases of the outbreak took place on June 26th, 1866, on the east verge of the metropolis, upon the banks of the river Lee, and the outbreak reached its acme in the fifth week following. The mortality among the population was proportionately less from this outbreak than from any previous outbreak in the metropolis, but the disease was not less fatal in proportion to the number of persons attacked. Of the total mortality of 5,915, no fewer than 4,276 occurred in the east districts of the metropolis and adjacent suburban districts of West Ham and Stratford. It was in these districts that the disease underwent the rapid and unexampled development which gave to the outbreak such formidable proportions in the fifth and sixth weeks of its duration. The unusual development of the epidemic in the east districts as compared with the rest of London began in the week ending July 13th. In the week following the rate of increase, as compared with the previous week, was nearly seven times greater than in the rest of the metropolis, but in the subsequent week the rate of augmentation became virtually the same over the whole of London. Neither the meteorology of the period, nor altitude, nor the nature of the soil, nor density of population, nor filth, nor the state of the sewage, nor locality, affords any explanation of the peculiar localisation of the outbreak in the east districts. There is but one condition known which might become capable of propagating cholera, common to the whole area of the outbreak—namely, the water supply. The sudden and virtually

contemporaneous development of the outbreak over the entire area of prevalence indicated a medium of propagation common to, and capable of rapid diffusion over the whole area; its sudden declension indicated the temporary efficiency to this end of such a medium. The area of prevalence approximated with remarkable closeness to a particular field of water supply, and there are facts which seem to prove that this approximation was not accidental. It is known that, immediately prior to the outbreak in the east districts of the metropolis and neighbouring districts across the Lee, impure water was distributed over this field of supply, and it is highly probable that this water was charged with choleraic poison. It is submitted that these facts and inferences supply a sufficient and legitimate explanation of the great and explosive developments of cholera in the east of London and its suburbs during the recent outbreak, and it is argued in respect of a serious objection to this theory, arising out of the actual or relative immunity from cholera of certain districts and institutions supplied with the suspected cholera-infected water, that in the present state of our knowledge of the outbreak, the positive and more generally applicable facts may justly and for practical purposes warrant a conclusion apparently in contradiction with certain negative facts of much more restricted application."

During 1866 the cholera was not restricted to London, but was diffused over the whole country, and in his annual report for the year the Registrar-General showed that it had prevailed, as on former occasions, in particular fields. "The epidemic," he observed, "has been most fatal on the sea-coast in the chief ports of the kingdom. It is by no means capricious, but obeys definite laws. It never destroys the people to any extent where the water supply is pure or where the hygienic conditions are good, when the authorities adopt judicious and well-organised measures of early treatment and systematic disinfection. Those districts which are supplied with bad water, have no effective system of sewerage, have no health officer, and have no precautions in force, should immediately set their houses in order, as they are still in imminent danger." He further pointed out that, though the cholera had diffused itself over the remotest parts of the kingdom, its ravages had been restricted everywhere except where the people were living in the open violation of the laws of health. "The returns contain many examples of the efficacy of hygienic measures, and afford strong proofs of the doctrine that, if England has suffered less from cholera in the present year than the Continent, or less than England herself in former years, it is mainly due to changes which all Europe can appreciate and adopt. Among other instances the Black Country, as it is called, about Wolverhampton may be cited. The epidemics of 1849 and 1854 destroyed in five districts more than 3,000 lives, while in the year 1866 the mortality has been inconsiderable. The water was formerly impure,

and could only be obtained with difficulty in a country covered with pits and works. But the people, with commendable energy, have brought good waters from a distance, and are realising the advantages of the change in Wolverhampton, Bilston, and the other towns."

Since 1866 Asiatic cholera has not been able to extend, or even to establish itself, in England. Cases have reached our shores in 1873, 1883, and 1892, but in no instance has there been any extension beyond the first cases. Sanitary improvement throughout the country has grown apace since 1866. Taking only the last dozen years, the expenditure of upwards of £22,000,000 on water supplies, and of £12,000,000 on sewerage, throughout the country, has been officially sanctioned by the Local Government Board. Londoners, as the result in a great measure no doubt of the gigantic experiments to which they were subjected in 1854 and 1866, are supplied to-day with better filtered water than they were thirty or forty years ago. But we cannot get away from the fact that more than half of the water is drawn from the open Thames and Lee, both of which rivers are polluted by sewage above the intakes of the water companies. A few years ago it was calculated by the late Sir Francis Bolton that the sewage of upwards of 70,000 people was delivered direct into the Thames or its tributaries above the intakes of the metropolitan water companies. Supposing a case of cholera could find its way amongst those 70,000 people, and the five and a half millions supplied by the metropolitan water companies would be only separated from its dread influence by a possibly imperfect filter of sand.

IMMUNITY OF WATER COMPANIES IN DISTRIBUTING POISONED WATER.

I am not quite sure what view the Government now takes of the responsibility of water companies for the distribution of polluted water, but I remember very well that in 1871, when cholera was advancing rapidly through Russia, and Baltic ships with fatal cases of cholera upon them were already arriving from Cronstadt at Hull, Mr. Foster, in making an official statement in the House of Commons as to the dreaded outbreak of cholera, made a singular remark, on which I made a note at the time and wrote in remonstrance, but without effect. It was worded thus—"Water companies should be mindful that the greatest disasters produced by cholera in this country have been due to their distribution of sewage-tainted water, and every care should be used by them in good time to prevent the recurrence of any such mischief. Their customers, too, should watch them narrowly." This is the extreme application of the principle of *caveat emptor*, which would probably not now be as generally approved as it was then, but I am not aware that in any case, however flagrant, a water company has been held either severely or criminally responsible for the poisoning of its "customers." I am not aware of any legislation which provides that they are or can be held

to be liable for such malfaisance of duty. It is, of course, very different for purveyors of unsound meat or of unsound fruit or vegetables, who are duly warned, and by the provisions they are liable to heavy fines and penalties, which are frequently imposed for selling damaged goods of the kind. I cannot understand the distinction which enables water companies to slaughter on a large scale a helpless population, of whose supply of one of the first necessities of life they hold monopolies in their respective districts, while the smaller fry tradesmen and costermongers are treated with such severity.

(*To be continued.*)

INSANITY AND MENSTRUATION.

B. D. Evans, M.D., reports (*Medical News*, Philadelphia, Vol. LXII., No. 20) cases in which attacks of insanity came on during menstrual periods, the mental condition being normal at other times. On the question of operation the author thinks—1. That in many cases of periodic insanity the exciting cause may be directly traced to the menstrual function. 2. That when the attacks of insanity are coincident with the catamenial flow, and an apparently normal mental condition prevails between the menstrual periods, it is fair to presume that the menstrual function is the cause of the attack. 3. That in such cases the removal of the ovaries is justifiable, though there be no pathologic lesion discernible; the opinion is even more forcibly indicated than in cases in which a decided pathologic condition of the ovaries exists, but in which the connection between the lesion of the ovaries and the mental perversion is doubtful.

CHLOROFORM NARCOSIS.

Sir B. W. Richardson describes (*Asclepiad*, No. 37) experiments with Junker's Chloroform Inhaler, to which he has added a chloroform bottle graduated in minims. Sir Benjamin writes:—"Provided the administration of the narcotic vapour is well-timed, and the vapour is inhaled with the normal respiration of an adult, it is found that at the close of the first minute about twelve and a half minims of chloroform have entered the lungs, and, on account of the smallness of the dose, are probably all absorbed by the blood, and are sufficient to induce the second degree of narcotism of Snow. Continuing the inhalation of one minim of chloroform per bellows compression during the following eight inspirations, about twenty and a half minims will have been inhaled, or, allowing a loss of two and a half minims by exhalation or the faulty timing of the administration, eighteen minims will have been absorbed during the first one and a half minutes, sufficient to induce the third degree of anæsthesia, or the condition in which surgical operations are usually commenced."

ROYAL ACADEMY OF MEDICINE IN IRELAND.

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General Secretary—W. THOMSON, F.R.C.S.I.

SECTION OF OBSTETRICS.

President—ANDREW J. HORNE, F.R.C.P.I.

Sectional Secretary—F. W. KIDD, M.D.

Friday, May 26, 1893.

The PRESIDENT in the Chair.

Ovarian Cystoma.

The SECRETARY read for Dr. C. YELVERTON PEARSON notes on an Ovarian Tumour.

E. F., aged forty-three. Admitted September 23rd, 1892. Single.

Previous health.—Very heathy and active up to Christmas, 1891, then got occasional vomiting, but noticed nothing else till Easter, then got an attack of threatened obstruction and pain in lower part of abdomen. Relieved with medicine and enema, but noticed after this that there was swelling in lower part of abdomen; this increased especially during month previous to admission.

Family history.—Father alive and healthy (sixty-nine). Mother rheumatic (seventy). One brother died of heart disease; one sister died of consumption. One sister living (thirty-five), in good health.

Condition on admission.—Swelling in hypogastric, umbilical, right and left inguinal and lumbar regions. It is asymmetrical. Has indications on surface indicating division into 3 principal lobes. Dull all over; fluctuating. Reaches as high as cartilages of ribs at left side, and mid-way between umbilicus and ribs on right. Has no bowel or bladder symptoms at present. Menses fairly regular, but scanty of late. No dysmenorrhœa. No leucorrhœa.

Operation.—Lasted three-quarters of an hour.

Incision 3 inches. Anterior portion of tumour smooth and free from adhesions. On tapping cyst proved to be unilocular, but the depressions on its surface correspond to remains of septa internally indicating previous sub-division. On drawing the cyst forwards it was found to

be extensively adherent to the omentum and small intestine. The omentum was ligatured in three places and adherent portion removed. Some of the adhesions were separated directly from the intestine; but one portion was so firmly adherent that the cyst wall was split with scissors and left attached to bowel, but was afterwards carefully removed subsequently to the removal of the tumour. The left ovary being unhealthy was also removed.

Operation, September 28th, at 12 30 p.m. After operation temperature was 97°; rose to 99·4° during the night; normal in the morning; varied between 97·2° and 99·4° during the six succeeding days. The suction syringe was used at 5 p.m. on day of operation (very little discharge); this was repeated two or three times in the 24 hours, up to fifth day, when drainage tube was removed. Catheter passed up to sixth day. Vomited frequently during the first two nights, and slept only about two hours each night.

Progress.—Drainage tube removed on fifth day. Stitches removed and plaster applied on tenth day (October 8th).

Ovarian Tumours.

Dr. A. J. Smith exhibited specimens of ovarian tumours. He said the first specimen he wished to show was a simple ovarian tumour. He removed it without any difficulty. It was a simple unilocular tumour. The second specimen was one of great interest. The patient complained of great pain in the right inguinal region, and he diagnosticated a small tumour in the right broad ligament. He operated and removed a beautiful specimen of hydrops folliculorum in October, 1892. At the same time he examined the left ovary and noticed that it was small and felt normal. However, the pain which the patient complained of was never entirely removed, and a month after the operation it became of a boring character and was referred to the original place. However, as a rule, after the removal of the ovaries the patient often complains of pain which gradually wears away, but in this case the pain became worse. She came up to him about a week ago, and he had the assistance of both the President and Mr. M'Ardle in examining her. They found a slight swelling and some tenderness in the right broad ligament in the seat of the old pedicle. The left ovary seemed fairly normal, but was enlarged since the previous examination. They decided to explore, and on looking in were astonished to find the left ovary enlarged and having a cystic appearance. Having removed the ovary, they turned to the pedicle, which was left, and they found that it had become adherent to the intestine. They endeavoured to separate it, but found that the adhesion of the pedicle to the anterior wall of the intestine was so great that they would have to resect the intestine, so they determined to leave it alone. Since the second ovary was removed the pain has left, but

whether it was due to the ovary or not time can only tell. The patient is doing well, without any rise of temperature, and no intestinal obstruction.

Exhibitions.

DR. MORE MADDEN exhibited—1stly. An enormous uterine tumour, together with gravid uterus, removed by Muller Porro's operation, and described in a paper read by the operator at the last meeting of the Academy. 2ndly. He also exhibited a large submucous uterine fibroid recently removed by enucleation in which it was necessary to deliver tumour with the midwifery forceps. Patient made a good recovery. 3rdly were shown the ovaries and tubes recently removed, as a result of hæmorrhage from fibromyoma. 4thly. Dr. More Madden also exhibited an exceptionally large multilocular ovarian tumour removed from a patient in the Mater Misericordiæ Hospital.

The following was the history of the case:—The patient is thirty years of age, unmarried, has always worked hard, the usual occupations of a farmer's daughter. First noticed tumour 15 months since (January, 1892). It began in the left ovarian region, and grew rapidly. Confined to bed since Feb. 14, 1892. On admission she was extremely prostrate, very emaciated, the abdomen was enormously distended. Previous to operation a small quantity of fluid was withdrawn for examination. On the 21st March an incision was made in the abdomen, and the tumour, which had extensive adhesions, was removed. The tumour, which was chiefly solid, weighed 68 lbs. The sutures were removed on the 8th day, the wound healed by first intention. After operation the patient did well. There was slight disturbance for some hours on the 3rd day owing to flatus, which was relieved. She is now convalescent, and has returned to her home.

DR. SMITH inquired how long the tumour was growing, and why the patient allowed the tumour to grow so large without operation.

DR. MORE MADDEN said the patient first complained in February, 1892, and the tumour was removed in April, 1893.

Paper on a Successful Case of Porro's Operation.

DR. COLAHAN (Galway) said the case was one of pregnancy occurring in a rachitic dwarf, in which it became necessary to perform abdominal section, delivery being impossible "per vias naturales." Porro's Cæsarean hysterectomy was the proceeding adopted to complete delivery, and was successful in saving both the mother and her child. The operation is still rare in this country. Dr. Bagot described the first successful case in April, 1891, Dr. M. Madden the second successful case 28th May, 1893. This is the third case, and the first, I believe, where mother and child were saved. The infrequency of abdominal section for obstetric purposes in this country is remarkable, for Cæsarean sections and the

Porro Cæsarean operations are rapidly growing in favour in England, on the Continent, and in America. Is it that cases are not forthcoming suitable for these proceedings? or is it that we still believe that the instrumental death of the child gives greater hope for the safety of the mother, and that we refuse to see, except in a few exceptional cases, conditions warranting us in advising or undertaking abdominal section?

This little patient (photograph shown), B. C., a rachitic dwarf, about forty years old, 39 inches high, unmarried; menstruated last July, 1891; became pregnant August, 1891; admitted to Lying-in Hospital Saturday, 14th May, 1892. On 15th May labour, at term, set in. On examination, impossible to reach os, which was drawn high up; promontory protruded sharply, leaving conjugate under 2 inches. Pains irregular and few. Ordered an opiate and sent to infirmary for operation.

Operation performed on the 16th May, 1892. Professor Lynham administered the anæsthetic, which was the A. C. E. mixture, and Dr. Lyden rendered me invaluable assistance at each stage of the proceeding. The operation lasted under 25 minutes, and although there was some vomiting, yet, on the whole, the little patient bore the operation remarkably well. Milk, Brand's beef jelly, and iced champagne were given regularly for the first few days. The temperature never rose above 101·4°. This on the 3rd day, never afterwards. On the 7th day a rigor, with enormous distension and tympanites, set in, but the prompt use by the nurse of O'Beirne's tube, and afterwards an enema, averted what appeared an impending attack of peritonitis. On the 18th day the pedicle came away, and at end of 3rd week the patient was moving about.

Why did I adopt Porro's method here instead of Cæsarean section with uterine sutures? Well, statistics are not usually reliable aids, yet when we are in doubt or anxiety they often sway us one way or the other. In my hurried search I gathered—1st, that in a general way, at least, Porro's operation is the more rapid and easier proceeding; 2nd, I fancied I learned that a true Porro's operation—with a sound uterus and a viable fœtus, carefully done and at a proper period—is at least as successful as a Sanger or Cameron Cæsarean section. Lastly, looking at the circumstances and surroundings of this little patient, and learning from the experience of others that these little people, having escaped from the dangers of one pregnancy, frequently get entangled in a second, I saw no reason why I should hesitate to deprive her of the chance of such a calamity.

Dr. Smyly said it was a matter of surprise to him that in this country of all the countries in the world Porro's operation should be such a rare thing. There were two things which probably accounted for it. One was the distrust of the people in this country to be operated on. The other was that many practitioners would rather let their patients die under their own care or send them over to England. He did not agree

with Dr. Colahan that the result of Porro's operation were equally good as compared with Cæsarean section. However, it was not a question that they could dogmatise upon, as the really bad cases fell to Porro. Still the mortality from Cæsarean section was only about 5 per cent., and he did not think that Porro could show as good a result as that. With some of the details of the operation he did not quite agree, but the question of greatest importance was whether they should sterilise the woman or not. In woman the strongest desire is to bear children, and it was his strong conviction that a woman should not be sterilised except it is by her own choice. One does not sterilise his patients in doing Cæsarean section.

Dr. A. J. Smith said the point to which he would specially refer was, whether a woman should be sterilised or not in doing Cæsarean section. The only case he knew of was one in which Dr. Macan performed Cæsarean section on a little dwarf, with good results to both mother and child. However, the little creature was frail, both morally and otherwise, and she became pregnant again. They were about to perform Cæsarean section again, but in the middle of the night the muscular wall of the uterus in the line of the old sutures gave way, and the patient died from collapse. He always felt that it would have been a great blessing to her if she had been sterilised. Whether it should be done by Porro's operation, or merely ligature of the tubes and ovaries, he thought that it would be a great benefit to society at large as well as to such people themselves if they had been sterilised.

Dr. More Madden thought that it would add to the advantages of the Academy if their fellow-members throughout the country would give them their experiences oftener. He thought the operation which Dr. Colahan had done reflected great credit on his surgical skill. He ventured to think, however, that though the operation was so successful, still it might possibly have been as well had he performed the Cæsarean operation—and more especially since the mortality of Porro's operation has been so very high as compared with Cæsarean section. In cases of rachitic pelvis the Cæsarean section has been eminently successful in Scotland, and in the hands of Cameron there have been only about two deaths in twenty operations, while the mortality of Porro's operation has, according to Sir Spencer Wells, been about 56 per cent. Therefore he thought the Cæsarean section safer for the women in whose interest it should be performed.

The After Discussion.

In the discussion that followed, Dr. Colahan, after thanking the President and other members for their very flattering remarks, stated that it was the first time, as far as he knew, that the operation was performed in the West of Ireland—and not anticipating such an under-

taking, he found himself without a serre-nœud at the last moment, and although the use of them was quite successful, yet he would not for choice use silver sutures for the abdominal incision.

In reply to Dr. Smyly, he said he quite agreed that there were many women who would not wish to be sterilised, and who would wish to have children in the future, but he was quite certain that this particular woman did not want to have future children, nor was it desirable that she should.

In reply to Dr. Smith, he said he had Dr. Macan's case at the Rotunda in his mind when he alluded to these dwarfs becoming pregnant a second time. Had Dr. Macan performed Porro's operation upon that patient instead of Cæsarean section, she would now be alive. Dr. Colahan was not aware, until Dr. Smith mentioned it now, that in Dr. Macan's case the woman died of rupture of the uterus at the site of the former uterine section.

In reply to Dr. More Madden, Dr. Colahan said that, with all respect, he coincided with Mr. Tait's opinion that Porro's operation, if properly done and at the proper time, is a most successful operation, and the mortality a mere bagatelle. Nothing could be more misleading or unfair than the statistics of Porro's operation. Dr. Colahan believed that Porro intended that his operation should be for the purpose of saving the mother and child, and should be done on a sound uterus and a viable fœtus. He further believed that Mr. Godson's classification of Porro's operation should be followed in collecting statistics; in this way the true Porro's operation would not be confounded with operations done for a uterine myomata, or for removing a child from a ruptured uterus where the fatal result is almost certain. If the true Cæsarean section was mixed up in this way it would soon fall into disrepute. In conclusion, he did not think that it was as yet very intelligible why the tedious processes of suturing the uterus and then sterilising that organ should be preferred to a true Porro's operation.

Dr. W. J. Smyly read portion of the Report of the Rotunda Lying-in Hospital for three years, 1889-92. Owing to the late hour he could not finish it, so it was proposed and carried unanimously that the Report should be printed and copies sent to the members (with the permission of the General Council), and that the discussion should take place at an extra meeting of the Section, the date of which was to be arranged hereafter.

The Section then adjourned.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F.R.Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

VITAL STATISTICS

For four Weeks ending Saturday, June 17, 1893.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	May 27.	June 3.	June 10.	June 17.		May 27.	June 3.	June 10.	June 17.
Armagh -	49·1	21·0	21·0	14·0	Limerick -	16·8	19·6	11·2	19·6
Belfast -	21·6	21·6	20·5	26·9	Lisburn -	46·8	21·3	8·5	17·0
Cork -	22·1	20·8	17·3	22·8	Londonderry	6·3	17·3	17·3	15·7
Drogheda	26·4	8·8	17·6	4·4	Lurgan -	9·1	9·1	18·7	22·8
Dublin -	24·5	26·3	22·4	27·1	Newry -	24·1	12·1	12·1	4·0
Dundalk -	25·1	25·1	25·1	12·6	Sligo -	15·2	25·4	5·1	15·2
Galway -	18·9	11·3	0·0	30·2	Waterford -	30·0	12·5	22·5	12·5
Kilkenny	28·3	14·2	28·3	23·6	Wexford -	36·1	4·5	27·1	13·5

In the week ending Saturday, May 27, 1893, the mortality in thirty-three large English towns, including London (in which the rate was 17·7), was equal to an average annual death-rate of 17·5 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·3 per 1,000. In Glasgow the rate was 23·2, and in Edinburgh it was 19·6.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 22·9 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in ten of the districts to 4·7 in Kilkenny—the 6 deaths from all

causes registered in that district comprising 1 from diarrhœa. Among the 110 deaths from all causes registered in Belfast are 5 from measles, 1 from whooping-cough, 2 from diphtheria, 2 from simple continued fever, 1 from enteric fever, and 3 from diarrhœa. The 32 deaths in Cork comprise 1 from measles, 1 from scarlatina, and 1 from enteric fever.

In the Dublin Registration District the registered births during the week amounted to 196—91 boys and 105 girls; and the registered deaths to 168—79 males and 89 females.

The deaths, which are 3 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 25·1 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 24·5 per 1,000. During the first twenty-one weeks of the current year the death-rate averaged 27·2, and was 4·1 over the mean rate in the corresponding period of the ten years 1883–1892.

Twenty-four deaths from zymotic diseases were registered, being 4 over the number for the preceding week, and also 4 above the average for the 21st week of the last ten years. They comprise 5 from measles, 2 from scarlet fever (scarlatina), 2 from influenza and its complications, 5 from whooping-cough, 3 from enteric fever, and 3 from erysipelas.

The number of cases of enteric fever admitted to hospital was 7, being 4 under the admissions for the preceding week. Seven enteric fever patients were discharged, 1 died, and 32 remained under treatment on Saturday, being 1 under the number in hospital on Saturday, May 20.

The number of cases of scarlatina admitted to hospital was 6, being 7 under the admissions for the preceding week: 17 patients were discharged, and 69 remained under treatment on Saturday, being 11 under the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 6 cases of measles (an increase of 1 as compared with the admissions for the preceding week), but no cases of typhus were received. Twenty cases of the former and 3 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 25, being 2 below the average for the corresponding week of the last ten years, and 3 under the number for the week ended May 20. The 25 deaths consist of 16 from bronchitis and 9 from pneumonia or inflammation of the lungs.

In the week ending Saturday, June 3, the mortality in thirty-three large English towns, including London (in which the rate was 17·6), was equal to an average annual death-rate of 17·9 per 1,000 persons

living. The average rate for eight principal towns of Scotland was 19·2 per 1,000. In Glasgow the rate was 21·6, and in Edinburgh it was 15·7.

The average annual death-rate in the sixteen principal town districts of Ireland was 22·0 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·3 per 1,000, the rates varying from 0·0 in twelve of the districts to 4·2 in Dundalk—the 6 deaths from all causes registered in that district comprising 1 from measles. Among the 110 deaths from all causes registered in Belfast are 2 from measles, 2 from whooping-cough, 1 from enteric fever, and 3 from diarrhœa.

In the Dublin Registration District the registered births amounted to 199—97 boys and 102 girls; and the registered deaths to 183—101 males and 82 females.

The deaths, which are 22 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 27·3 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted into public institutions from localities outside the district, the rate was 26·3 per 1,000. During the first twenty-two weeks of the current year the death-rate averaged 27·2, and was 3·7 under the mean rate in the corresponding period of the ten years 1883-1892.

Twenty-five deaths from zymotic diseases were registered, being 7 in excess of the average for the corresponding week of the last ten years, and 1 over the number for the week ended May 27. They comprise 4 from measles, 1 from typhus, 4 from influenza and its complications, 2 from whooping-cough, 2 from enteric fever, 1 from diarrhœa, 3 from dysentery, and 1 from erysipelas.

Only 6 cases of enteric fever were admitted to hospital, being 1 under the admissions for the preceding week, and 5 under the number for the week ended May 20. Seven enteric fever patients were discharged and 31 remained under treatment on Saturday, being 1 under the number in hospital at the close of the preceding week.

Six cases of scarlatina were admitted to hospital, being equal to the number of admissions for the preceding week: 12 patients were discharged and 63 remained under treatment on Saturday, being 6 under the number in hospital on Saturday, May 27.

The hospital admissions for the week included, also, 10 cases of measles (against 6 for the preceding week), but no cases of typhus were received. Twenty-three cases of the former and only 1 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 25, being equal to the number for the preceding week, but 3 under the average for the 22nd week of the last ten years. The 25

deaths comprise 9 from bronchitis and 14 from pneumonia or inflammation of the lungs.

In the week ending Saturday, June 10, the mortality in thirty-three large English towns, including London (in which the rate was 18·1), was equal to an average annual death-rate of 18·2 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·2 per 1,000. In Glasgow the rate was 22·4, and in Edinburgh it was 18·1.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 19·8 per 1,000 of the population, based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 1·9 per 1,000, the rates varying from 0·0 in eleven of the districts to 5·0 in Waterford—the 9 deaths from all causes registered in that district comprising 2 from scarlatina—both in the same family. Among the 104 deaths from all causes registered in Belfast are 9 from measles, 1 from scarlatina, 1 from whooping-cough, 2 from diphtheria, 1 from enteric fever, and 6 from diarrhœa.

In the Dublin Registration District the registered births amounted to 194—91 boys and 103 girls; and the registered deaths to 159—76 males and 83 females.

The deaths, which are 8 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 23·7 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 22·4 per 1,000. During the first twenty-three weeks of the current year the death-rate averaged 27·0, and was 3·7 under the mean rate in the corresponding period of the ten years 1883–1892.

Only 13 deaths from zymotic diseases were registered, being 8 below the average for the corresponding week of the last ten years, and 12 under the number for the week ended June 3. They comprise 5 from measles, 1 from influenza, 2 from whooping-cough, 1 from simple continued fever, and 1 from enteric fever.

Seven cases of enteric fever were admitted to hospital, being 1 over the admissions for the preceding week, and equal to the number for the week ended May 27. Two enteric fever patients were discharged, and 36 remained under treatment on Saturday, being 5 over the number in hospital at the close of the preceding week.

Ten cases of scarlatina were admitted to hospital, being 4 in excess of the admissions for the preceding week: 8 patients were discharged, and 70 remained under treatment on Saturday, being 7 above the number in hospital on Saturday, June 3.

The hospital admissions for the week included, also, 2 cases of measles and 3 of typhus. In the preceding week 10 cases of measles were admitted, but no cases of typhus were received. Nineteen cases of the former and 4 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 23, being 2 under the number for the preceding week, and 6 below the average for the 23rd week of the last ten years. The 23 deaths comprise 10 from bronchitis, 4 from pneumonia or inflammation of the lungs, and 3 from pleurisy.

In the week ending Saturday, June 17, the mortality in thirty-three large English towns, including London (in which the rate was 19·1), was equal to an average annual death-rate of 19·4 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·2 per 1,000. In Glasgow the rate was 23·9, and in Edinburgh it was 17·1.

The average annual death-rate in the sixteen principal town districts of Ireland was 24·2 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 3·0 per 1,000, the rates varying from 0·0 in seven of the districts to 7·0 in Armagh—1 of the 2 deaths from all causes registered in that district being from scarlatina. Among the 137 deaths from all causes registered in Belfast are 9 from measles, 3 from whooping-cough, 1 from diphtheria, 3 from enteric fever, and 7 from diarrhœa. The 5 deaths in Waterford comprise 2 from measles and 1 from whooping-cough.

In the Dublin Registration District the registered births amounted to 203—108 boys and 95 girls; and the registered deaths to 189—100 males and 89 females.

The deaths, which are 19 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·2 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted into public institutions from localities outside the district, the rate was 27·1 per 1,000. During the first twenty-four weeks of the current year the death-rate averaged 27·1, and was 3·4 under the mean rate in the corresponding period of the ten years, 1883–1892.

Twenty-six deaths from zymotic diseases were registered, being 6 above the average for the corresponding week of the last ten years, and 13 over the low number for the week ended June 10. They comprise 4 from measles, 2 from scarlet fever (scarlatina), 1 from influenza, 9 from

whooping-cough, 3 from enteric fever, 2 from diarrhœa, 1 from dysentery, and 1 from erysipelas.

Ten cases of enteric fever were admitted to hospital, being 3 over the admissions for the preceding week, and 4 over the number for the week ended June 3. Four enteric fever patients were discharged, 1 died, and 41 remained under treatment on Saturday, being 5 above the number in hospital at the close of the preceding week.

Nineteen cases of scarlatina were admitted to hospital, being 9 in excess of the admissions for the preceding week. Six patients were discharged, 2 died, and 81 remained under treatment on Saturday, being 11 over the number in hospital on Saturday, June 10.

The hospital admissions for the week included, also, 8 cases of measles and 3 of typhus. Nineteen cases of the former and 4 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 27, being 4 over the number for the preceding week, and 1 above the average for the 24th week of the last ten years. The 27 deaths comprise 12 from bronchitis and 9 from pneumonia or inflammation of the lungs.

VITAL STATISTICS

For four Weeks ending Saturday, July 15, 1893.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000 :—

Towns	Weeks ending				Towns	Weeks ending			
	June 24	July 1	July 8	July 15		June 24	July 1	July 8	July 15
Armagh -	35·1	28·0	28·0	14·0	Limerick -	14·0	19·6	19·6	19·6
Belfast -	26·9	26·7	32·1	36·2	Lisburn -	17·0	8·5	4·3	29·8
Cork -	15·2	15·9	21·5	24·9	Londonderry	14·1	12·6	4·7	29·8
Drogheda	35·1	43·9	4·4	8·8	Lurgan -	13·7	4·6	36·5	13·7
Dublin -	23·4	29·5	23·9	26·5	Newry -	24·1	12·1	8·1	16·1
Dundalk -	16·8	12·6	25·1	20·9	Sligo -	0·0	0·0	25·4	60·9
Galway -	22·7	34·0	15·1	7·6	Waterford -	35·0	27·5	35·0	40·0
Kilkenny	14·2	9·4	23·6	9·4	Wexford -	27·1	18·1	13·5	22·6

In the week ending Saturday, June 24, 1893, the mortality in thirty-three large English towns, including London (in which the rate was 22·6), was equal to an average annual death-rate of 22·1 per 1,000 persons living. The average rate for eight principal towns of Scotland was 22·0 per 1,000. In Glasgow the rate was 23·7, and in Edinburgh it was 17·7.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 22·9 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·4 per 1,000, the rates varying from 0·0 in nine of the districts to 10·0 in Waterford—the 14 deaths from all causes registered in that district comprising 4 from measles. Among the 137 deaths from all causes registered in Belfast are 7 from measles, 1 from scarlatina, 1 from typhus, 4 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 15 from diarrhœa.

In the Dublin Registration District the registered births amounted to 208—97 boys and 111 girls; and the registered deaths to 170—83 males and 87 females.

The deaths, which are 10 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 25·4 in every 1,000 of the population. Omitting the deaths (numbering 13) of persons admitted into public institutions from localities outside the district, the rate was 23·4 per 1,000. During the first twenty-five weeks of the current year the death-rate averaged 27·0, and was 3·2 under the mean rate in the corresponding period of the ten years 1883–1892.

Thirty-one deaths from zymotic diseases were registered, being 5 over the number for the preceding week, and 12 in excess of the average for the 25th week of the last ten years. They comprise 6 from measles, 1 from scarlet fever (scarlatina), 3 from influenza and its complications, 1 from whooping-cough, 3 from enteric fever, 9 from diarrhœa, and 1 from erysipelas.

The number of cases of enteric fever admitted to hospital was 7, being 3 under the admissions for the preceding week, and equal to the number for the week ended June 10. Nine enteric fever patients were discharged, 1 patient died, and 38 cases remained under treatment on Saturday, being 3 under the number in hospital on Saturday, June 17.

Only 7 cases of scarlatina were admitted to hospital, against 19 admissions in the preceding week: 18 patients were discharged, and 70 remained under treatment on Saturday, being 11 under the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 2 cases of measles

and 1 case of typhus: 15 cases of the former and 5 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 22, being 4 below the average for the corresponding week of the last ten years, and 5 under the number for the week ended June 17. The 22 deaths comprise 12 from bronchitis and 8 from pneumonia or inflammation of the lungs.

In the week ending Saturday, July 1, the mortality in thirty-three large English towns, including London (in which the rate was 22·2), was equal to an average annual death-rate of 22·7 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·5 per 1,000. In Glasgow the rate was 22·8, and in Edinburgh it was 22·0.

The average annual death-rate in the sixteen principal town districts of Ireland was 24·9 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 5·0 per 1,000, the rates varying from 0·0 in ten of the districts to 8·9 in Belfast—the 136 deaths from all causes registered in that district comprising 7 from measles, 7 from whooping-cough, 2 from diphtheria, 2 from enteric fever, and 27 from diarrhœa. The 11 deaths from all causes registered in Waterford comprise 3 from measles, being 1 under the number of deaths from that cause registered in the preceding week.

In the Dublin Registration District the registered births amounted to 216—109 boys and 107 girls; and the registered deaths to 206—98 males and 108 females.

The deaths, which are 36 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 30·7 in every 1,000 of the population. Omitting the deaths (numbering 8) of persons admitted into public institutions from localities outside the district, the rate was 29·5 per 1,100. During the first twenty-six weeks of the current year the death-rate averaged 27·2, and was 2·8 under the mean rate in the corresponding period of the ten years 1883-1892.

Forty-five deaths from zymotic diseases were registered, being 23 in excess of the average for the corresponding week of the last ten years, and 14 over the number for the week ended June 24. They comprise 2 from influenza and its complications, 7 from whooping-cough, 1 from diphtheria, 1 from ill-defined fever, 4 from enteric fever, 22 (including 19 deaths of children under 5 years of age) from diarrhœa, and 1 from erysipelas.

Only 5 cases of enteric fever were admitted to hospital, being 2 under the admissions for the preceding week, and 5 under the number for the week ended June 17. Eleven enteric fever patients were dis-

charged, 2 died, and 30 remained under treatment on Saturday, being 8 under the number in hospital at the close of the preceding week.

Eleven cases of scarlatina were admitted to hospital, being 4 over the admissions for the preceding week, but 8 under the number for the week ended June 17. Seventeen scarlatina patients were discharged, and 64 remained under treatment on Saturday, being 6 under the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 7 cases of measles: 16 cases of that disease remained under treatment in hospital on Saturday.

Thirty-one deaths from diseases of the respiratory system were registered, being 9 over the number for the preceding week and 7 in excess of the average for the 26th week of the last ten years. They comprise 12 from bronchitis and 9 from pneumonia or inflammation of the lungs.

In the week ending Saturday, July 8, the mortality in thirty-three large English towns, including London (in which the rate was 22·3), was equal to an average annual death-rate of 23·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·5 per 1,000. In Glasgow the rate was 25·2, and in Edinburgh it was 17·3.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 24·7 per 1,000 of the population, based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 5·6 per 1,000, the rates varying from 0·0 in nine of the districts to 15·0 in Waterford—the 14 deaths from all causes registered in that district comprising 6 from measles, being 3 over the number of deaths from that disease registered in that city during the preceding week. Among the 163 deaths from all causes registered in Belfast are 6 from measles, 2 from whooping-cough, 4 from enteric fever, and 40 from diarrhœa. The 6 deaths in Dundalk comprise 1 from measles, 1 from diphtheria, and 1 from diarrhœa. The Registrar of Londonderry No. 2 District remarks: "Two cases of small-pox were reported to me early this week—Patients were removed to new City Infectious Diseases Hospital. No other cases."

In the Dublin Registration District the registered births amounted to 166—81 boys and 85 girls; and the registered deaths to 165—67 males and 98 females.

The deaths, which are 15 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·6 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted into public institutions from localities outside the district, the rate was 23·2 per 1,000. During the first twenty-seven weeks of the

current year the death-rate averaged 27·1, and was 2·6 under the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 43, being 2 under the number for the preceding week, but 21 over the average for the 27th week of the last ten years. The 43 deaths comprise 6 from measles, 1 from scarlet fever (scarlatina), 3 from influenza and its complications, 2 from whooping-cough, 3 from enteric fever, 22 from diarrhœa (against an average of 3 for the corresponding week of the last ten years), and 1 from erysipelas. Eighteen of the 22 deaths from diarrhœa were of infants under 1 year old.

Eight cases of enteric fever were admitted to hospital against 5 for the preceding week. Seven enteric fever patients were discharged, and 31 remained under treatment on Saturday, being 1 over the number in hospital at the close of the preceding week.

The number of cases of scarlatina admitted to hospital was 9, being 2 under the admissions for the preceding week: 20 patients were discharged, and 53 remained under treatment on Saturday, being 11 under the number in hospital on Saturday, July 1.

The hospital admissions for the week included, also, 1 case of typhus; but there were not among the admissions any cases of measles, 7 cases of which disease had been admitted during the week ended July 1. Five cases of typhus and 12 of measles remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system, which had risen from 22 for the week ended June 21 to 31 for the following week, fell again to 22, but this number is 1 in excess of the average for the corresponding week of the last ten years. The 22 deaths comprise 14 from bronchitis and 7 from pneumonia or inflammation of the lungs.

In the week ending Saturday, July 15, the mortality in thirty-three large English towns, including London (in which the rate was 22·9), was equal to an average annual death-rate of 24·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·9 per 1,000. In Glasgow the rate was 23·4, and in Edinburgh it was 18·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 28·6 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 7·1 per 1,000, the rates varying from 0·0 in eight of the districts to 20·0 in Waterford—the 16 deaths from all causes registered in that district comprising 6 from measles (being equal to the number of deaths from that disease registered in Waterford during the preceding week), 1 from enteric fever, and 1 from

diarrhœa. Among the 184 deaths from all causes registered in Belfast are 5 from measles, 2 from scarlatina, 7 from whooping-cough, 3 from enteric fever, and 53 from diarrhœa. The 7 deaths in Lisburn comprise 1 from enteric fever and 1 from diarrhœa.

In the Dublin Registration District the registered births amounted to 195—102 boys and 93 girls; and the registered deaths to 182—89 males and 93 females.

The deaths, which are 34 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 27·1 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 26·5 per 1,000. During the first twenty-eight weeks of the current year the death-rate averaged 27·1, and was 2·4 under the mean rate in the corresponding period of the ten years 1883–1892.

Forty-six deaths from zymotic diseases were registered, being 3 over the number for the preceding week, and 26 over the average for the 28th week of the last ten years. They comprise 2 from measles, 1 from typhus, 2 from influenza and its complications, 2 from whooping-cough, 3 from enteric fever, 29 from diarrhœa (against an average of 3 for the corresponding week of the last ten years), 1 from dysentery, and 1 from erysipelas. Twenty-six of the 29 deaths from diarrhœa were of children under 5 years of age, 20 being infants under 1 year old.

Eleven cases of enteric fever were admitted to hospital, being 3 in excess of the admissions for the preceding week: 8 enteric fever patients were discharged, 1 patient died, and 33 remained under treatment on Saturday, being 2 over the number in hospital on Saturday, July 8.

The number of cases of scarlatina admitted to hospital was 8, being 1 under the admissions for the preceding week, and 3 under the number for the week ended July 1. Eight patients were discharged, and 53 remained under treatment on Saturday, being equal to the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 2 cases of measles and 1 case of typhus: 8 cases of the former and 6 of the latter disease remained under treatment in hospital on Saturday.

Twenty-four deaths from diseases of the respiratory system were registered, being equal to the average for the corresponding week of the last ten years, and 2 over the number for the week ended July 8. They comprise 8 from bronchitis, 13 from pneumonia or inflamation of the lungs, and 2 from croup.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of June, 1893.

Mean Height of Barometer, - - -	30·002 inches.
Maximal Height of Barometer (on 7th, at 9 a.m.), -	30·398 ,,
Minimal Height of Barometer (on 27th, at 11 p.m.), -	29·320 ,,
Mean Dry-bulb Temperature, - - -	59·9°.
Mean Wet-bulb Temperature, - - -	56·1°.
Mean Dew-point Temperature, - - -	52·8°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·402 inch.
Mean Humidity, - - - - -	78·5 per cent.
Highest Temperature in Shade (on 19th), - -	74·7°.
Lowest Temperature in Shade (on 23rd), - -	46·9°.
Lowest Temperature on Grass (Radiation) (on 23rd)	42·8°.
Mean Amount of Cloud, - - - -	46·2 per cent.
Rainfall (on 12 days), - - - -	1·716 inches.
Greatest Daily Rainfall (on 26th), - - -	·492 inch.
General Directions of Wind, - - -	E., N.W., S.E.

Remarks.

June, 1893, was the fourth month in succession with a mean temperature above average and a rainfall below average. The month under review did not—it is true—"break the record" as regards either high temperature or scanty rainfall; but it was in all respects most favourable. In Dublin rain fell freely from the 3rd to the 6th inclusive (·521 inch) and again from the 22nd to the 28th inclusive (1·144 inches), but the weather was otherwise dry, except for local thunder-showers on the 15th.

In Dublin the arithmetical mean temperature (59·9°) was above the average (57·8°) by 2·1°; the mean dry bulb readings at 9 a.m. and 9 p.m. were also 59·9°. In the twenty-eight years ending with 1892, June was coldest in 1882 (M. T. = 55·8°), and in 1879 (the "cold year") (M. T. = 55·9°). It was warmest in 1887 (M. T. = 62·3°), in 1865 (M. T. = 61·0°), and in 1868 (the "warm year") (M. T. = 60·5°). In 1886 the M. T. was 57·5°; in 1888, 56·2°; in 1889, 59·5°; in 1890, 58·1°; in 1891, 59·0°; and in 1892, 56·7°.

The mean height of the barometer was 30·002 inches, or 0·085 inch above the corrected average value for June—namely, 29·917 inches. The mercury rose to 30·398 inches at 9 a.m. of the 7th, and fell to 29·320 inches at 11 p.m. of the 27th. The observed range of atmospherical pressure was, therefore, 1·078 inches—that is, less than an inch and one-tenth.

The mean temperature deduced from daily readings of the dry bulb

thermometer at 9 a.m. and 9 p.m. was 59·9°, or 4·6° above the value for May, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·465), the value was 59·4°, or 2·2° above the average mean temperature for June, calculated in the same way, in the twenty-five years, 1865–89, inclusive (57·2°). The arithmetical mean of the maximal and minimal readings was 59·9°, compared with a twenty-five years' average of 57·8°. On the 19th the thermometer in the screen rose to 74·7°—wind, N.N.E.; on the 23rd the temperature fell to 46·9°—wind, N.N.W. The minimum on the grass was 42·8° also on the 23rd.

The rainfall amounted to 1·716 inches, distributed over 12 days. The average rainfall for June in the twenty-five years, 1865–89, inclusive, was 1·817 inches, and the average number of rainy days was 13·8. The rainfall was, therefore, slightly below, while the rainy days were also below the average. In 1878 the rainfall in June was very large—5·058 inches on 19 days; in 1879 also 4·046 inches fell on 24 days. On the other hand, in 1889, only ·100 of an inch was measured on 6 days; in 1887 the rainfall was only ·252 of an inch, distributed over only 5 days; in 1874 only ·405 of an inch was measured on 9 days; and in 1868 only ·677 of an inch fell on but 6 days. In 1888 the rainfall was as much as 3·045 inches, distributed over as many as 18 days. In 1890 it was 1·930 inches on 18 days, in 1891 2·753 inches on 14 days, and in 1892 1·671 inches on 17 days.

High winds were noted on 7 days, but the force of a gale was attained on only one occasion—the 28th. Temperature reached or exceeded 70° in the screen on 5 days, compared with 17 days in 1887, only 1 day in 1888, 10 days in 1889, only 2 days in 1890, 6 days in 1891, and 4 days in 1892. Thunder was heard on the 15th. A solar halo was seen on the 11th.

On Thursday, the 1st, a depression which had for several days lain almost motionless over the south of Sweden dispersed, and an irregular area of low pressure began to form over Ireland. The weather, however, remained dry until Saturday, the 3rd, when electrical showers fell heavily in places, particularly at Blackrock, Co. Dublin. Thunder was heard on this day at Glasnevin Botanic Gardens.

At the beginning of the week ended Saturday, the 10th, the weather was unsettled and showery, owing to the presence of shallow irregular depressions to the northward, while an anticyclone lay over the Bay of Biscay. In Dublin rain fell very freely on Monday and in smaller quantity on Tuesday. On Sunday thunderstorms occurred all along the east coast of Great Britain. During most of this changeable time the barometer rose steadily, so that by 8 a.m. of Wednesday readings were everywhere high and remarkably uniform. In fact, at the hour named, the extreme difference in atmospherical pressure all over the United Kingdom was only ·08 inch—the highest reading being 30·42 inches at

Yarmuth, and the lowest 30·34 inches in the Scilly Islands. After Wednesday the anticyclone held to the close of the week, the area of highest pressure being found off the east coast of Scotland, where dense fogs and low temperature prevailed. In most other parts of the Kingdom summer warmth daily increased until Saturday—the thermometer rising to 79° at Loughborough on Wednesday, 76° at Liverpool on Thursday, and 74° at Parsonstown and in London on Friday. On the evening of this day a thunderstorm with heavy rain (1·19 inches) occurred at Parsonstown. In Dublin the mean height of the barometer was 30·318 inches, pressure ranging between 30·105 inches at 9 a.m. of Sunday (wind, W. by S.) and 30·398 inches at 9 a.m. of Wednesday (wind, N.E.) The corrected mean temperature was 58·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 59·2°. On Thursday both maximal and minimal temperatures for the week were recorded—viz., 69·6° and 49·5°—range, 20·1°. Rain fell on the first three days to the amount of 512 inch, ·259 inch being registered on Sunday and ·201 inch on Monday. The prevailing winds were at first W.S.W., afterwards E. Much fog and haze prevailed in the Irish Sea after Wednesday, so that the fog-gun at the Kish-bank lightship was frequently fired both by day and by night.

Splendid weather characterised the week ended Saturday, the 17th. Until Wednesday it was cool as well as fair, but on and after that day temperature was high and summerlike by night as well as by day. On Sunday local thunderstorms occurred in the N. and N.W. of Ireland, notwithstanding an anticyclonic distribution of atmospheric pressure. After Sunday a shallow depression advanced northwards across France. It caused thunderstorms and heavy rains over the greater part of that country, but in the British Isles only local thundershowers occurred, although thunder and lightening were very prevalent on Wednesday and Thursday. On the afternoon of the latter day thundershowers fell in Dublin, yielding ·051 inch of rain, the only rainfall of the week. In this city the influence of easterly seabreezes in lowering day-temperature was well seen, particularly in the earlier part of the period—thus, the maxima of the first four days were 66°, 65°, 65°, and 67° in Dublin, compared with 75°, 70°, 71°, and 75° at Parsonstown. On the east coast of Great Britain, similarly, the thermometer failed to reach 60° at most stations on Sunday and Monday. In Dublin the mean height of the barometer was 30·104 inches, pressure decreasing from 30·229 inches at 9 a.m. of Sunday (wind, E.N.E.) to 29·883 inches at 9 a.m. of Wednesday (wind, E.), and then increasing to a maximum of 30·373 inches at 9 p.m. of Saturday (wind, E.). The corrected mean temperature was 61·8° The mean dry bulb readings at 9 a.m. and 9 p.m. were 62·9°. On Tuesday the screened thermometers fell to 50·1°, on Saturday they rose to 72·9°. The mean direction of the wind was easterly.

As to the week ended Saturday, the 24th—at first summerlike in the extreme—very warm, calm and bright—the weather afterwards fell into a very unsettled state, becoming cold, squally, and showery after Wednesday, the 21st—the longest day. On Sunday, the anticyclonic isobar of 30·3 inches embraced nearly the whole of the British Islands—at 8 a.m. the extreme pressures at mainland stations differed by only *one-tenth* of an inch, the highest readings being 30·38 inches at Loughborough, Cambridge, Malin Head, and Belmullet; the lowest being 30·28 inches at Prawle Point, in Devon. The weather was bright, calm, and hot—the thermometer rising to 86° in the shade at Cambridge and Loughborough, and to 80° even at Parsonstown and Valentia Island. In the evening a thunderstorm occurrred at the last-named station. On Monday the heat was still more intense—88° in the shade being recorded in London and at Cambridge. Thunderstorms occurred towards evening in the South of Ireland, South Wales, and the eastern and south-eastern parts of England. After this a cold northerly current passed rapidly southwards, bringing heavy showers which became general during the last three days. On Thursday a depression formed over Scotland and moved slowly south-eastwards and finally eastwards, becoming deeper and larger as it travelled. At 8 a.m. of Friday the barometer was down to 29·24 inches at Shields, and below 29·30 inches all over the north of England and south of Scotland. In Dublin the mean pressure was 29·846 inches, the barometer falling from 30·360 inches at 9 a.m. of Sunday (wind, E.), to 29·467 inches at 9 a.m. of Friday (wind, N. by W.). The corrected mean temperature was 59·0°—that for Sunday and Monday having been 65·8°. The mean dry bulb temperature at 9 a.m, and 9 p.m. was 58·7°. On Monday the thermometers in the screen rose to 74·7°; on Friday they fell to 46·9°. Rain fell on the last three days to the amount of ·310 inch, ·130 inch being measured on Thursday and ·100 inch on Saturday. The prevalent wind was northerly—N.N.E. to N.W.

During the closing period of the month—from the 25th to the 30th inclusive—the weather presented two distinct types. Unsettled, squally and showery as well as cool at first, it improved after Wednesday, the 28th, and the month closed with fine, warm, and in all respects summer-like conditions. On Sunday, the 25th, the well-defined depression, which had travelled from Scotland in a south-easterly direction on the previous Friday (see above), lay with its centre over the south of Norway. N.W. winds and cool, showery weather prevailed in the British Islands. In Dublin heavy showers fell locally at 3 30 and 11 p.m. Next day (Monday) an irregularly-shaped depression passed northwards across Ireland, causing a heavy rainfall in the south of this country (1·10 inches at Roche's Point, Cork), and in Wales and parts of England. During Tuesday and Wednesday a well-marked cyclonic system travelled north-eastwards from the N. of Ireland and across Scotland to the Norwegian

Sea, where it dispersed. This disturbance produced moderate to fresh S.W. and W. gales at some Irish stations, as well as in the English Channel and off the mouth of the Thames. The barometer now rose quickly, and at 8 a.m. of Friday, the 30th, atmospherical pressure was uniformly high all over the kingdom—pressure ranging only from 30·20 inches over Central England to 30·05 inches at Belmullet. Quiet, bright, summerlike weather was the consequence, and so the month closed. In Dublin, during this period, the barometer ranged from 29·320 inches at 11 p.m. of Tuesday (wind, S.S.W.) to 30·142 inches at 9 a.m. of Friday (wind, S.E.). As regards temperature, on Monday and Friday the minimum in the thermometer screen was 50·0°; on Tuesday the maximum was 69·4°. Rain fell on the first four days of the period to the amount of ·834 inch, ·492 inch being registered on Monday. This was the maximal fall in 24 hours recorded during the month. The prevailing winds were S.E. and S.W.

The rainfall in Dublin during the six months ending June 30th amounted to 9·624 inches on 78 days, compared with 11·770 inches on 97 days in 1892, 8·748 inches on 77 days in 1891, 13·413 inches on 94 days in 1890, 10·576 inches on 97 days in 1889, 12·113 inches on 87 days in 1888, 6·741 inches on 67 days in 1887, and a twenty-five years' average of 12·313 inches on 95·4 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in June, 1893, was 2·211 inches, distributed over 10 days. Of this quantity ·750 inch fell on the 26th, and ·410 inch on the 5th. The total fall since January 1 has been 11·776 inches on 75 days.

The rainfall at Cloneevin, Killiney, Co. Dublin, amounted to 1·63 inches on 10 days. The greatest fall in 24 hours was ·61 inch on the 26th. The average rainfall for June in eight years was 1·42 inches on 11·5 days. There was absolute drought from the 7th to the 21st, both days inclusive. Since January 1, 1893, 9·69 inches of rain have fallen on 77 days, the average rainfall for the six months ending June 30 having been in eight years 10·66 inches on 82 days.

METRIC SYSTEM IN PRESCRIPTION WRITING.

Eli H. Long, M.D., suggests (*Medical News*, Philadelphia, Vol. LXII., No. 12) that the metric system can be easily used, even by those who know nothing of the metric tables, by remembering that grams and cubic centimetres are to grains and minims in the proportion of *about* 16 to 1 really (15·43 and 16·23 respectively). His plan is to order 16 doses, and to order as many grams and cubic centimetres of the substance in the whole bottle as he wants grains and minims in each dose. An 8-oz. bottle with ℥ss. doses and a 2-oz. bottle with ʒi. doses can thus be ordered.

PERISCOPE.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY.

THE monthly meeting of the Executive Committee of this Society was held on June 8th, at the offices of the British Medical Association. The chair was taken by Dr. F. de Havilland Hall, and there were also present Mr. Frederick Wallace, Dr. J. Pickett, Dr. W. Knowsley Sibley, Mr. F. Swinford Edwards, Dr. M. Greenwood, Mr. Edward Bartlett, and Dr. A. S. Gubb. The usual accounts were produced, and showed that the Society continued steadily to increase in prosperity. During the month of May £252 5s. had been expended in the form of sick pay to members who from illness or accident were incapacitated from following their profession, some of the cases being of a very sad nature. The current sick claims were carefully examined, and the committee satisfied themselves that the members in question were still entitled to sick benefit. Certain of the new proposals were also carefully examined, as the management are determined to admit only really sound lives to the benefits of the Society. Like all successful associations, the Medical Sickness, Annuity, and Life Assurance Society has to face the difficulty of finding satisfactory investments for its ever-growing funds, and a long discussion upon this subject took place at the meeting. These funds now amount to nearly £70,000, and great care has to be exercised in order that this sum shall produce a fair rate of interest, and at the same time be invested in perfectly safe securities. The care with which the new cases have been examined has made the sickness experience of this Society very favourable, and this, combined with the exceptional economy exercised in its management, has produced large reserves, so that the question of the investment of the funds is of high importance. Prospectuses, forms of proposal, and full information will be forwarded on application to the Secretary, Medical Assurance Society, 33 Chancery Lane, W.C.—*British Medical Journal.*

JOHNS HOPKINS HOSPITAL.

WE take the following figures from the Statistical Tables of this institution for the year ending 31st Jan., 1892:—1,969 white patients were treated: 807 medical, 580 surgical, 582 gynæcological; with a mortality in the three classes respectively of 8·3, 4·1, and 2·7 per cent. The medical diseases numerically greatest were: typhoid (64), phthisis pulmonalis (56), malarial fever (50), neurasthenia (47). On the surgical side 25 cases of carcinoma were treated and 19 of epithelioma, 23 of hæmorrhoids and 22 of fistula in ano. Of the *coloured* population 307 were treated: 115 for medical, 80 for surgical, and 112 for gynæcological

diseases. The death-rates were: 25·2, 5·0, and 0·0 per cent. On the medical side, 12 were treated for "arterial sclerosis,' 8 for phthisis pulmonalis, 7 for mitral insufficiency, 6 for chronic nephritis, and 6 for typhoid fever. Tuberculosis and tuberculous abscesses contributed 16 cases to the surgical wards. From the table of nationalities we find that the five countries supplying the largest percentages of patients were:—United States (68·6), Germany (16·4), Ireland (5·1), England (2·6), and Russia (2·2).

EUCALYPTUS OIL.

We recently noticed a case in which the oil obtained from the *Eucalyptus globulus* had been used successfully in the treatment of puerperal fever. The dose was three minims. The *Australasian Medical Gazette* reports a case of fatal poisoning with this drug, which occurred in New Norfolk, Tasmania. Dr. Andrew Neale states that "a little over half an ounce" was taken by a boy of ten. He was in perfect health, but, the rest of the family having colds, he swallowed the oil as a preventive, recalling the well-known epitaph, "I was well. I would be better. Here I lie." He died in 15 hours. Other cases are mentioned in which "serious symptoms" followed doses of one drachm; but this appears to be the only clearly fatal case on record. The oil appears to be a favourite domestic remedy in those parts.

GERMICIDAL PROPERTIES OF NUCLEINS.

Drs. Vaughan, Novy, and M'Clintock have an important paper (*Medical News*, Philadelphia, Vol. LXII., No. 20) on the germicidal properties of nucleins. The action of testicular, thyroid, and yeast nuclein on various germs was tested. The authors suggest that the germicidal constituent of blood-serum belongs to the nucleins.

SYMPHYSEOTOMY.

We observe a tendency to the revival of this obsolete and somewhat brutal operation. *La Puglia Medica* is a new monthly, published in Bari, edited by Dr. Zuccaro, and promising well in its first two numbers. Other countries, it says in its opening page, have academies, scientific societies, libraries, but from Naples to Sicily there is none of such things—"scientific patriotism languishes, and emulation is non-existent." The new journal is intended to supply, as far as possible, the need. The principal paper in the numbers before us is Dr. Campione's "Considerazioni Storico-Statistiche sulla Simfiscotomia," in which he gives a history of the operation and a summary of results. In 1768 it was designed by Sigault; in 1886 Prof. Morisani, in a paper read before the Société Italiano di Ostetricia e Ginecologia, pronounced the operation one which "can and ought to be permanently established in practice, and which, in skilful hands, is capable of giving excellent results; in 1892 Dr. Harris,

of Philadelphia, published "The Remarkable Results of Antiseptic Symphyseotomy." The results of the operation are summarised in Dr. Campione's paper. In 81 years (1777–1858) 80 cases were recorded, in the practice of 41 individuals—34 of them in Italy and 29 in France, one only in England. In these the maternal mortality was 35·0, the fœtal 55·5 per cent. In the period 1866–1880, 50 operations were performed in two Neapolitan hospitals with better results—20 per cent. mortality of mothers, 18 of children. Between May, 1881, and January, 1886, 18 operations (in Naples) gave a maternal death-rate of 44·4: fœtal, 27·7. Harris, of Philadelphia, reported subsequently 54 cases, occurring from January, 1886, to October, 1892, to which Dr. Campioni adds 7. Of these 61 operations, 35 were performed in Naples, 12 in Paris, 4 in the United States. 59 mothers and 55 children survived. This carefully compiled paper deserves the attention of obstetricians.

CITY WATER SUPPLY.

Lo Sperimentale quotes from *Ingegnaria Sanitaria* a paper by S. Saccarelli on the quantity of water distributed daily in 14 large European cities and New York; and also in 29 Italian cities and towns. The tables give only populations and quantity of water in litres, so that comparison is difficult. We have, therefore, calculated from them the *number of inhabitants to one litre of daily water-supply*, and arranged the cities in order of abundance of supply, giving the general table in full, and the principal towns of the Italian table. Litres can, of course, be converted to gallons by dividing by 4·5:—Marseille, 954; Cologne, 1,518; Lisbon, 1,529; Leipsig, 1,863; Berlin, 2,078; Lyon, 2,233; Hamburg, 2,275; Warsaw, 2,941; New York, 3,017; Dresden, 3,200; Breslau, 3,986; Brussels, 5,241; Paris, 9,231; Vienna, 10,809; London, 30,000. Of the 29 Italian cities, only nine enjoy more than 150 litres (33 gallons) per head per day, which is taken as the necessary supply by Italian sanitary engineers. Brescia has 265 inhabitants for each litre of daily water-supply, Padua 324, Rome 425, Genoa 589, Naples 2,048, Florence, 3,387, Venice 3,659, Bologna 4,269, Turin 4,571.

TREATMENT OF FLAT-FOOT.

A. Clay, M.R.C.S. (*Birmingham Medical Review*, June, 1893), describes the treatment of flat-foot under six heads:—(1) Massage with lin. saponis; (2) bathing with sea-salt; (3) exercise; (4) manipulation; (5) tenotomy; (6) use of special boots. Speaking generally, "I may say that in early cases, 1, 2, and 3 are all that will be required. In more advanced cases—but still uncomplicated by rigidity—boots will be required in addition to the foregoing; and finally, in rigid cases the whole of the above must be considered as necessary adjuncts to effect a cure." Under the heading of *Exercise* the following hints are given:—"Extension and

flexion of the ankle, but especially adduction or inversion of the foot when the inward turn is impeded by the surgeon resisting. Then three or four times a day patients should be instructed to walk bare-foot (or in the stocking-feet), on their toes many times backwards and forwards across the room. This should be done deliberately, and care taken not to get the instep too vertical, as in this position the weight of the body is supported more by the bones than muscles." "Walking must be enforced, the boots being constructed on anatomical principles; and care should be taken that the toes are kept quite in front of the patient, and fairly big strides taken."

KEELEYISM.

B. D. EVANS, M.D. (*Medical News*, Philadelphia, Vol. LXII., No. 18), after an exhaustive analysis of a large number of cases treated at Keeley Institutes, comes to the following conclusions:—1. That it is, as Dr. Keeley says, "A system"—a system of charlatanism of large proportions. 2. That the system is carried into effect in a purely mechanical way, and that the "Institute physicians" are little less than local commercial agents, knowing nothing of the "cure" which they handle and administer. 3. That the statistics published by the "Keeley people" cannot be relied upon in the slightest, inasmuch as secrecy is their motto, whenever and wherever it pays in gold. 4. That their so-called cure contains dangerous and poisonous drugs, calculated, by the indiscriminate manner in which they are administered, to produce insanity and other serious psychoses. 5. That the remedy has an intoxicating and exhilarating effect, and that many of the finely written testimonials are written while the patients are under this influence. 6. That secrecy is maintained purely for the purpose of enhancing the commercial value of the commodity, and not because a valuable discovery has been made—speculating upon the fact that with the masses *omne ignotum pro magnifico* holds good. 7. That many ministers and prominent gentlemen who have spoken publicly in behalf of Keeley remedies and methods were actuated to do so by a desire to welcome any agency that would alleviate the evils of alcoholism, and not by any knowledge of the real merits of the "cure" or the nature of the results that follow its use. 8. That any physician who allows himself to indorse the Keeley cure, either in words or by advising a patient to take it, not only commits an act unprofessional, but forfeits his right to the respect of his professional brethren.

ACTION OF ALCOHOL UPON FROG-SPAWN.

DR. J. J. RIDGE reports (*Medical Pioneer*, June, 1893) experiments on frog-spawn kept in solution of alcohol of various strengths. Even such a weak solution as 1 in 10,000 kept a large number from developing, and those so developed died several days sooner than those in water.

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OF

MEDICAL SCIENCE.

SEPTEMBER 1, 1893.

PART I.

ORIGINAL COMMUNICATIONS.

ART. VII.—*Some Modifications of Liston's Long Splint and Leg Side Splints, with Cradle for Swinging.*[a] By HERCULES MACDONNELL, M.Ch., M.D. Univ. Dubl.

I FEEL that an apology is almost due this Section of the Academy for introducing to your notice such trivial matter as slight modifications in leg and thigh splints. Yet for practical surgeons any adaptation which gives increased security and decreases discomfort is not unworthy of consideration.

I will first deal with some alterations in Liston's long splint.

The main object in treating fractures of the thigh is that extension and counter-extension are not perfectly complementary; when rigidity is secured, it is distressing to the patient either by undue pressure on the perinæum or an unnecessary amount of extension from the ankle; whatever method of extension obtains, the perinæum offers the resisting power to extension, and this of a non-elastic rigid character. No doubt springs and complicated interrupters have been devised, but they are not reliable or simple in their action. For the past ten years I have been in the habit

[a] Read before the Section of Surgery of the Royal Academy of Medicine in Ireland, on Friday, January 20, 1893.

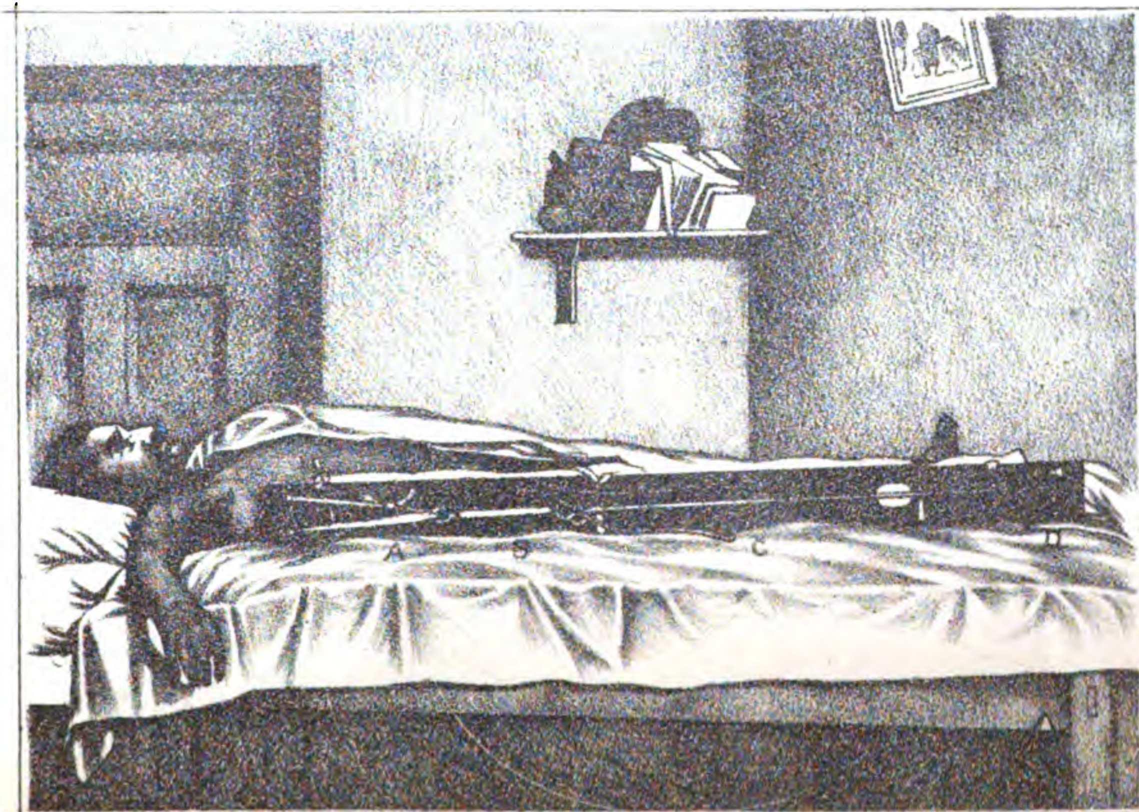
of using, both in hospital and private practice, Liston's long splint with one or two modifications, which I shall proceed to describe.

Just above the forked end of the splint I have had a round hole bored about half an inch in diameter; let into this is a brass thimble. The perinæal lac is made by sewing the usual pad along the middle portion of a strong linen web tape about five feet in length and one inch broad.

The chief modification consists of an India-rubber interrupter. This is made of solid India-rubber, varying in thickness and length, according to the elasticity required, and having a brass thimble, such as sailmakers use, lashed into either end. The interrupter most frequently required is $\frac{7}{8}$ of an inch in diameter and 6 inches in length; it requires an extending force of 14 lbs. to stretch it one inch. The splint is applied in the ordinary way. Extension is made from a plaster stirrup extending two inches below the sole of the foot. Into the loop is placed a block of wood, with a hole bored through the centre and rounded at the sides, so as not to cut the stirrup. The block should be the full breadth of the foot to take all pressure off the ankle. A stout piece of sash-line, with a knot at one end, is passed through the block and out through the eyelet at the forked end of the splint. This is carried up to the interrupter and through the eyelet at its lower end. The ends of the perinæal band are brought through the holes in the upper end of the splint; one is passed through the upper eyelet of the interrupter and fastened by a sheet bend or reef knot to the other end of the perinæal band. The fracture can then be reduced either in the ordinary way or by traction on the extension rope. In a few minutes the elasticity of the rubber overcomes muscular resistance, and nothing remains but to take off some of the extending force, fasten the rope, and put a bandage round the limb, leaving the lac, the interrupter, and the extension rope outside the bandage for future convenience. The result is eminently satisfactory. An endless elastic circuit is formed. The force is equally divided between extension and counter-extension; should either the rope or lac stretch, or in any way get slack, the India-rubber interrupter takes it up, and equilibrium is restored.

With properly made lacs, there is no danger of cutting, scalding, or chafing the perinæum. To raise the heel slightly off the bed, and keep the splint vertical, I use a simple rest. It is made of wood an inch thick, about 8 inches long, and 5 high; a slot the thickness of the long splint is cut out of it, a little more than one-

PLATE I.



A. Perinæal lac, brought through splint at top and through eyelet in India-rubber interrupter.

B. India-rubber interrupter, with eyelets at both ends.

PLATE II.

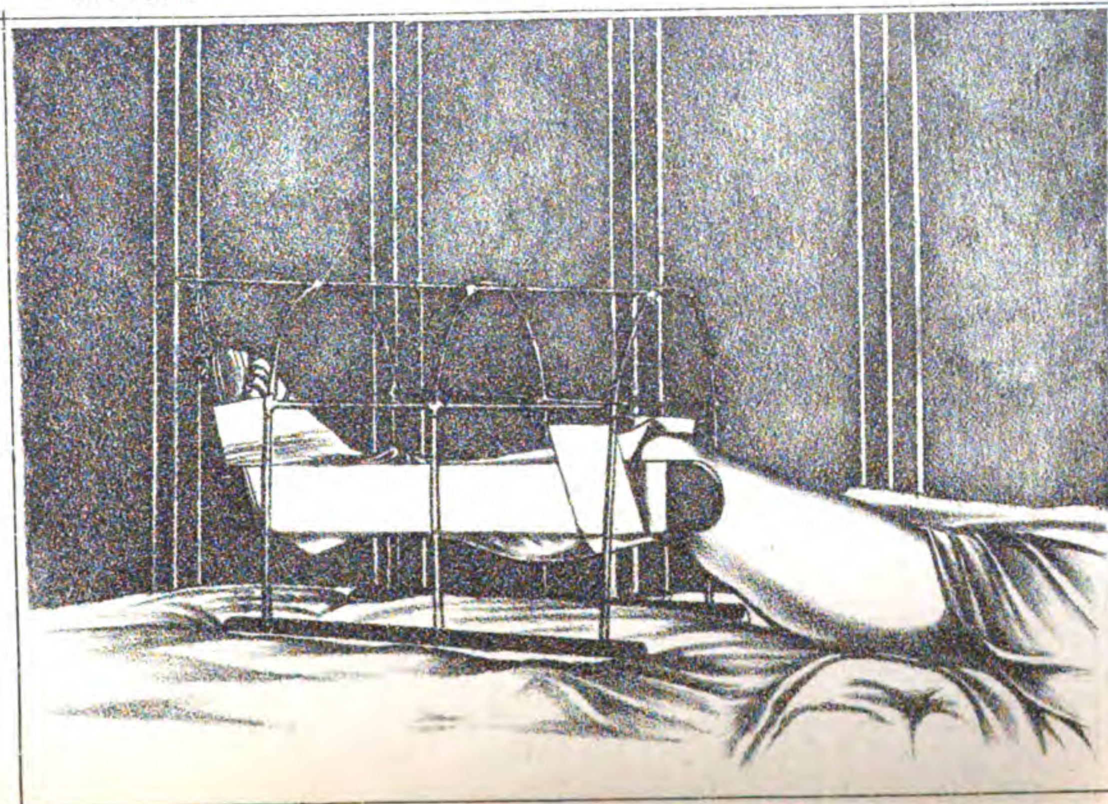
E. Plaster stirrup.
F. Extension rope.
G. Cross rest, with splint resting in it.

adaptability to any sized leg; pressure being lateral and controlled by the screw bolts, the side splints with the calico underneath act as a sling to the leg; the calf moulds the calico to fit it accurately, and the heel does not bear on anything; the entire front of the leg is uncovered, and the slightest displacement can be readily detected.

Compound fractures can be treated with great convenience, as each side splint can be rolled back while the other remains in position, dressings and pads can be replaced, and, with a little care, the calico changed, though this is seldom necessary if a piece of waterproofing, covered with finely teazed oakum or tenax, be placed over the calico and next the limb. To insure complete comfort it is necessary to swing the leg. I have had cradles made of a very inexpensive and simple nature. They are composed of two wooden bearers, with three round galvanised iron wire hoops, $\frac{3}{16}$th of an inch thick, the top of the cradle being about 18 inches high. Half way up these hoops are bound together by a single wire of equal thickness, soldered to each separately. Another wire runs along the top half way over the curve, and projects some 4 or 5 inches, being turned back on itself to form the corresponding stay on the other side; these form a sort of outrigger, meeting at the projected end. The foot plate has a brass eyelet screwed into it, and a thin chain slings the foot plate to any desired height from the end of the outrigger of the cradle. An endless band of calico $2\frac{1}{2}$ or 3 inches broad is folded on itself and passed under the splint below the knees; this is secured to the side stays on the cradle by two pieces of light rod-iron wire clips made the width of the calico sling, turned up at a right angle to the bearing bar, and bent backwards at the extremity to catch the side stay of the cradle.

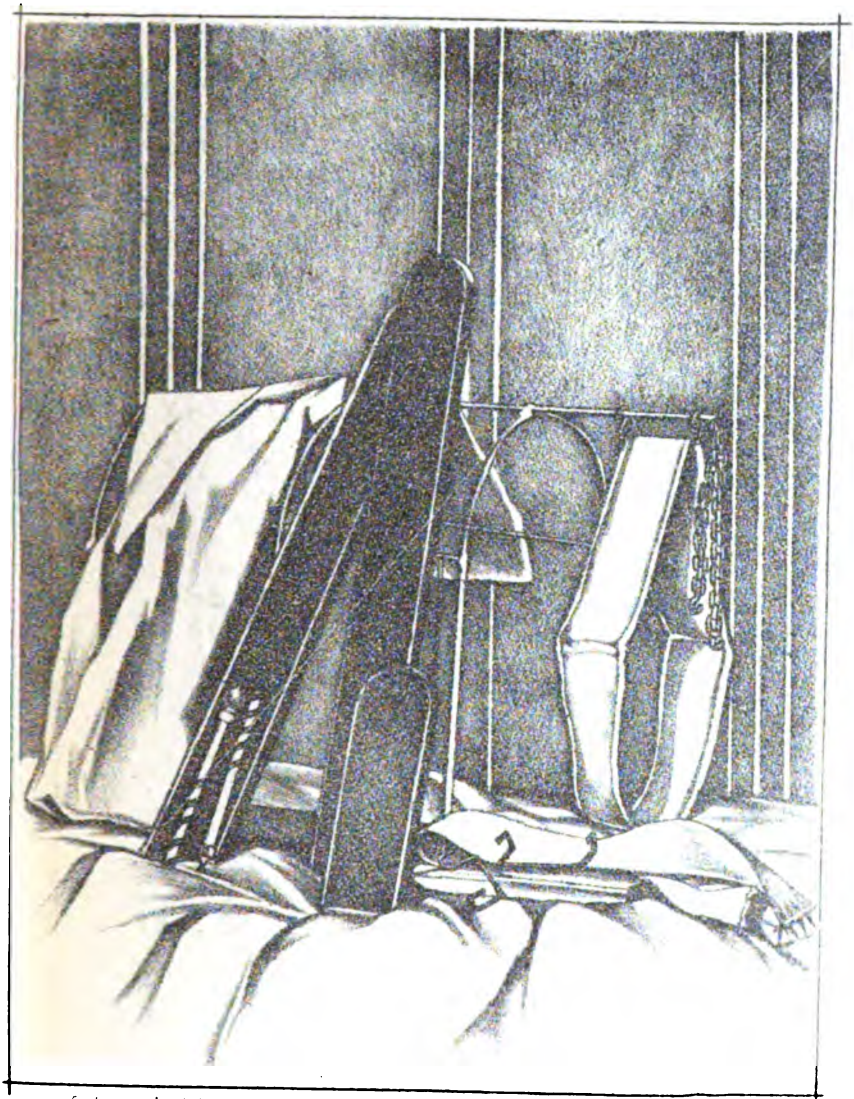
Nothing can be simpler than this method of slinging. It is firm. The limb can be raised or lowered to any height, and no part of the limb rests on any unyielding substance. I have treated some hundreds of simple and compound fractures by this method with satisfactory results, and have never heard a patient complain of that bane—a sore heel.

PLATE III.



Cradle, with leg in position in side splints, swung by chain from foot-piece, and endless linen swing under knee.

PLATE IV.



Lithographed by *[illegible]*

ART. VIII.—*Skin Eruptions of Rheumatic Origin.*[a] By TRAVERS R. M. SMITH, M.D., B.A., Univ. Dubl.; Member of the Harveian Society; Resident Medical Officer, Kilburn Dispensary, London, N.W.

WHEN one muses upon an affection with such protean manifestations as rheumatism, yet of the pathology of which, at least so far as concerns morbid anatomy, so little is known, one may well feel that he is treading on very uncertain ground when dealing with skin eruptions of rheumatic origin. But whether we think we understand the pathology of rheumatism or whether we do not, this affection nevertheless, I suppose, remains for every one of us an indubitable fact and entity, whatever our theories may be or howsoever experience may have taught us.

Those whose observations of rheumatism have, perforce, been subjective as well as objective, carried on *nolens volens* in *corpore vili*, will perhaps agree with me in thinking that such experience is likely to bias the mind in favour of giving a possibly too prominent place to *pain* as a pathognomonic symptom of the affection. But *pain* in affections of the integument, as we know, differs much in intensity, *cæteris paribus*, according to the depth of tissues involved, their density or compactness, and the amount of resistance offered by neighbouring structures.

In other words, pain depends on the relative liability of the terminations of the sensory nerves—the touch corpuscles, end bulbs, and Pacinian bodies—to be effectually compressed by exudation.

A child, *e.g.*, with erythema nodosum, will cry with the pain of the eruption when it affects the integument stretched immediately over the shins, and not be conscious of the nodosities which may at the same time be present in the looser skin over the forearms.

In erysipelas of the face the eyelids may be enormously swollen with little more than some inconvenience to the patient. This is, no doubt, due to the elastic and yielding material which fills the orbit, and which acts as an effective buffer. Yet, when the erysipelas has spread to the scalp, stretched as it is immediately over bone, it causes such intense pain that the condition of the patient often becomes alarming, and there may be considerable delirium—insomuch that it used to be taught that

[a] Read before the Priory Medical Club.

in such cases the erysipelas had spread to the meninges of the brain.

If this holds good of a disease which, as is known, affects the skin in its whole depth as well as the subcutaneous tissue, *à fortiori* pain will not be a symptom when the upper strata of the corium, or the epidermis only is affected, in eczema capitis, for instance, when the swollen tissues meet with no other resistance than that offered by atmospherical pressure. These considerations may seem trivial, but, I think, they help us to understand how it is that we hear so little of the eruptions which, according to Drs. Barlow and Cheadle, may be the only manifestation, present at one time, of rheumatism. Another reason, no doubt, is to be found in the fact that these rashes, when widely diffused over the body, so closely simulate, may be absolutely identical with those of measles, German measles, and scarlatina. The difficulty of differentiating between them is further enhanced when we recollect that tonsillitis, which is generally recognised as pathognomonic of Rötheln and scarlatina, may owe its origin to a rheumatic factor.

DIFFERENTIAL DIAGNOSIS.

Attention to the following points may, however, generally enable one to form a correct diagnosis:—

The mode of *distribution* of the eruption, which, contrary to what obtains usually in the exanthems just named, is likely to manifest itself *first* on the extremities and may be entirely limited to them.

The *tout ensemble* of the constitutional symptoms—*e.g.*, there being no distinct and sudden invasion, as in scarlatina; or catarrh of the conjunctivæ and larynx, as in measles.

The *time of year.* Most cases appear to occur during the colder months, and especially in autumn (Dühring).

The evanescence of the rash and the absence of subsequent pigmentation will exclude the syphilides.

It is needless to add that the possible concurrent prevalence of an epidemic of some one of the exanthems should be ascertained.

CASE I.—H. S. September 27th, called to see well-nourished boy, aged twelve, who had a large papular rash, thickly covering the arms and shoulders and the legs from the waist downwards.

The face, as well as the upper part of the trunk, was quite clear. The rash was identical with that of fully-developed measles, but there was no catarrh of eyes or nose; and it was difficult to decide whether the fauces might have been slightly congested or not. His temperature was 101°.

The following history was given:—Two days previously he began to feel ill and vomited. The next day a rash was noticed on the feet.

On my second visit—viz., third day of illness—there was a cluster of small acuminate papules on each cheek, and larger papules were distributed rather sparsely over the upper part of trunk, where, on the day before, there was nothing to be seen. The sclerotics of both eyes, moreover, were injected, and the throat appeared this time to be really congested.

The rash on the abdomen and the lower limbs gradually became more diffused and confluent, till the parts were uniformly red as in scarlatina, except for some thin serpiginous lines of anæmic skin, which could be detected near the popliteal spaces. On ninth day of illness the boy complained of pain over præcordial region, and the first sound was found to be muffled. The next day there was a distinct murmur, presumably mitral systolic, which, on the following day, became musical in character.

The rash faded without desquamation or without leaving any appreciable traces of its presence, except that on the upper part of the back, where it was more discrete, and where the papules were the largest (size of split pea), there was, for a day or two, some faint yellow pigmentation.

Mother reported on eleventh day of illness that in the morning she noticed the feet were swollen on the dorsal aspect. There was next to no constitutional disturbance throughout, although for at least eleven days there was a rise in the temperature, which ranged from 101° to 102°. The rash lasted some ten days.

Nov. 22.—Three weeks afterwards his condition was the following:—Anæmic; musical murmurs; stiffness at the back of knees; pain in the feet, which the mother says are always swollen in the morning, so that he has great difficulty in putting on his boots. She then relates that just a week before her boy took to his bed she was returning home one evening—it was a Saturday—and the young fellow let her into the house. He was in *puris naturalibus*. He had been busy taking a warm bath when he heard his mother's knock at the door, and jumped out without even drying himself. He shivered for a long time after this, and complained that he could not get warm.

Case II.—J. G. (September 26th), boy, aged five. Papular erythema over the lower limbs from the buttocks downwards—very like measles; no catarrh of eyes or nose; slightly swollen tonsils; temperature 99°;

no constitutional disturbance. Rash lasted some three or four days, and faded away without any desquamation or leaving any traces.

A week later when calling I found the child suffering from torticollis and looking distinctly anæmic. Heart sounds normal. No history of parents could be obtained (illegitimate). Other children circulating around this child—no other case. No epidemic of any of the exanthems in the neighbourhood at the time.

Case III.—Mrs. W. (Jan. 30, 1888), laundress, aged forty-nine, well-nourished and healthy-looking.

While at work she was taken with pains all over the body, and had to take to her bed. When I saw her she had round, dark-red, slightly-raised spots distributed rather sparsely all over the body. Papular erythema. There was no appreciable constitutional disturbance. The rash was not unlike a syphilide. It lasted barely a couple of days, and left no trace of its presence on the skin. I did not, unfortunately, inquire whether this woman was of rheumatic habit. She has now gone to Dalston.

Case IV.—Mrs. H. (Jan. 10), aged thirty; thin, anæmic woman; gave the following account of her illness:—Took a warm bath on Sunday morning, and after she was dressed she began to shiver so much that in order to get warm she had to take to her bed. After a while she perspired profusely, and next morning she had what she called an attack of measles. It first appeared on the lower part of the body, and lastly on the left arm. It caused her great irritation, so that on the Tuesday when I saw her one could see the marks of nails and many small round excoriations, which corresponded no doubt to the summits of papules or wheals, for the itching suggests urticaria. The rash, or rather what remained of it, was visible only on the left upper arm. It was too slight, however, to be of any interest. She had no catarrh of the nose or the conjunctivæ, but she had red and tender fauces and a furred tongue. The superficial lymphatic glands over the sterno-mastoid muscle of the left side of the neck were somewhat enlarged and tender.

She has never had rheumatism, but she says her mother was a martyr to it, and she is the only one of the family who has escaped.

Dr. Kingsbury, of Blackpool, in a communication to the *British Medical Journal* for December 8th, 1883, mentions the case of a young man who got an attack of acute urticaria with high temperature, sore throat, itching, pains all over, and thirst with furred tongue. He was believed to be suffering from scarlatina. The cause as such is not adduced, but it is men-

tioned that he was training for some swimming races when he fell ill.

Are these cases instances of erythema caloricum—effects of temperature—due to a sudden cooling of the skin? Are they caused by functional derangement of the nervous system, what Mr. Hutchinson would call "truly catarrhal affections"—*i.e.*, essentially reflex in their mode of origin?

Case V.—R. C., little girl, aged one year and ten months. She had been suffering for a few days from bronchial catarrh, and was anæmic.

Nov. 1st.—Erythema nodosum on the front part of the legs. Papular erythema on forearms, about the elbow-joint.

Nov. 2nd.—Spots, which had been discrete, had now coalesced. Over each shin there was a large pale swelling, looking like a gigantic wheal (urticaria tuberosa), and on the forearms deep red patches of erythema marginatum.

Nov. 15th.—Ankles and lower part of legs reported to be swollen and painful.

History.—Father, and likewise grandfather and grandmother on maternal side, said to have suffered from rheumatism.

Case VI.—E. N., a young man, aged eighteen, whom, on my first visit, I found lying motionless on his back with his knees drawn up. He complained of severe pain all over the body. He was extremely anæmic, all the more strikingly so that his hair was jet black. His mother informed me that some time previously he had had rheumatic fever, and I agreed with her in thinking that his present illness was of the same nature. The next day he developed a few spots of erythema nodosum on his legs and on one shoulder. Fresh nodosities kept making their appearance during the following days, while the older ones underwent changes similar to those which occur in an ordinary bruise.

All parts of the integument became affected except on the lower part of the trunk, and, I believe, the scalp, the palms of the hands, and the soles of the feet. On the dorsal aspect of his hands and fingers there were some very neat examples of erythema iris—*i.e.*, a fresh red spot occurring in the centre of an older one which had already become purple or yellow, and there were also one or two perfect rings with an anæmic centre (erythema annulatum). His face, moreover, presented a strange appearance. Besides a few large nodosities on his temple and forehead, one formed in the upper lid of each eye, and, owing to the loose tissue of the part, caused swellings which completely obliterated vision, and which in hue, size, and position exactly resembled those that pugilists are wont to inflict with their well-aimed blows.

About this time he complained of pain in swallowing. This was found to be caused by a nodosity which had developed in the soft palate; another subsequently formed in the tongue which swelled so much that the mouth for several days could not be closed. By sighs and groans the poor fellow then tried to indicate that he had pain in his abdomen, which was discovered to be tender on pressure and highly tympanitic. The patient now rapidly altered for the worse. The meteorism increased to an enormous extent, so that the skin of the abdomen had a glossy appearance, the pulse became small and thready, and a condition of collapse was set up from which it was not thought there could be any rallying. From this time, however, improvement began to set in. There was no recurrence of eruption, and the young man made a good recovery. When the swelling of the tongue, however, had subsided, there was found in the place of the nodosity a punched-out ulcer with clean edges, large enough to admit the tip of the finger.

CASE VII.—Friday, Dec. 16.—G. H., healthy-looking, well-nourished, full-blooded boy, aged four. Nothing abnormal except urine, with considerable deposit of lithates, and a couple of blotches of erythema, one of which round, the size of a florin, was situated on the right thigh, the other, the size of an almond, on the right side of the chest in the axillary line.

The history of the case was, however, somewhat remarkable:—The previous Monday, four days before our visit, he came back from school with his face much swollen and red, "looking like a tomato." He complained of great pain in the head and some pain in the legs. It came on in paroxysms causing him to sob, "it was," he said, "like boys jumping on his head."

On Tuesday night mother noticed red blotches on his shoulders.

Wednesday—Blotches on the legs, then on the arms.

Thursday—Sore throat.

Two days after my first visit the boy's ankles were swollen and painful. A week later he complained of pains in the joints of his fingers (the articulations between the 1st and 2nd phalanges).

Mother very rheumatic, likewise her sisters. Remembers having had red spots on her legs the first time she had rheumatic fever.

Diet of child carefully inquired into. This possible ætiological factor can, I think, be put aside.

CASE VIII.—E. D. (Dec. 3), girl, aged eleven, anæmic, but otherwise well nourished. Complained of pain in the right side extending along right axilla to the inner side of the arm. These parts were very tender on pressure (rheumatic dermatalgia), and it was with some difficulty that a physical examination of the chest could be made. This revealed moderate pleuritic effusion on same side as the pain.

The following history was given:—Five days previously her eyes were much swollen.

The next day she was thirsty, and "it hurt her to swallow" (sore throat).

The next day.—Pain in right side, so that "she couldn't cough."

The next day.—Hands swollen, and the following day, preceding my visit, she had pains in her right axilla and right arm.

She was put on sodii salicyl., gr. viii., every 4 hours. When I called next day, approximately 17 hours afterwards, when not more than gr. 24 of the remedy had been taken, she had faint erythematous patches, irregular in outline, on the forehead and on the right forearm.

She complained, moreover, of pains in her legs, and her mother informed us that in the morning she noticed a "peculiar mottled" appearance of the skin over these parts.

Temperature above normal, reaching to 104°.

Three days afterwards she had again erythematous patches on the face, one of which extended from the bridge of the nose underneath the eyes on either side, in the shape of a butterfly. She complained, moreover, of pain in her right leg, and had on the inner side of the right thigh an erythematous macula the size of an almond.

Case IX.—A. G. August 27th, 1890, called in to see a spare little girl, aged seven, suffering from uncontrollable vomiting with pain in the stomach. The mother gave the following history:—Eight days before the backs of the hands were swollen and painful, the next day the legs were similarly affected and remained so for a couple of days. On the latter she noticed "red spots," the largest of which might have been the size of a sixpenny piece. The swelling was such that she was obliged to cut the child's drawers with scissors to get them off before putting her to bed. Two days afterwards the child had sufficiently recovered to go into the garden, but the following day (forty-eight hours before my arrival) she began to lose her appetite and to become fretful—vomiting and sickness setting in gradually and ever increasing in frequency. I saw the child in the morning, and the same day, about six o'clock, they sent for me. The child had for hours been complaining of great pain in her abdomen, and had just passed some three or four ounces of pure blood per anum. On account of the extreme pain the child was still suffering, she was given $\frac{1}{4}$ gr. morphia suppository with directions to give a second in the night if necessary. On calling next day I found they had been obliged to do this. The pain was subdued, but vomiting still went on for several days apparently quite unaffected by drugs. It did not stop till the latter were put aside, and a few drops of "liquor carnis" in a teaspoonful of water given every hour.

At the end of the first week of my attendance on this case a cluster of red papules (erythema papulatum) was noticed over each elbow on the

extensor side, similar, the mother informed us, to what appeared on the legs.

The child made a very slow recovery, and remained dejected and listless for weeks.

Two uncles on the maternal side had had "rheumatic fever," otherwise no rheumatic history. The child had not previously had rheumatism, nor has she (December, 1892) developed any rheumatic symptom subsequently.

Dr. Barlow (in his Opening Address to the Brit. Med. As. in 1883 on "Rheumatism in Children") adduces examples of such cases as above, which he believes are of rheumatic origin.

Osler describes them under name of "Angioneurotic Œdema," and quotes Quincke, who speaks of them as vasomotor neuroses, under the influence of which the permeability of the vessels is suddenly increased.

CASE XI.—G. During cold weather (January), a spare young woman, aged twenty-four, with a florid complexion, came to us with a cluster of red papules along the outer border of her chin on the left side. They were somewhat tough to the feel and were a little painful when touched. They were preceded by pain in the left ear. This patient says that she had had a similar affection once before, not preceded by pain in the ear that time. She attributes it to the effect of cold air which always makes her face, she avers, feel swollen and puffy.

She has had rheumatism as a child, and suffered much from chilblains on hands as well as feet, and has had cramp in her legs at times. This young woman's mother is hardly ever free from rheumatism. She also suffered much from chilblains and from cramp, or rather, as she describes it, from the muscles going "into knots."

Chilblains are, as we know, due to cold, and generally attack anæmic children; cramp is generally attributed to fatigue of a muscle, to the presence of so-called "fatigue products." These ætiological factors are identical with those which give rise to rheumatism. Have they any connection with rheumatism? Clinically it is often difficult to differentiate between them—*e.g.*, a large chilblain attacking the foot looks very like a rheumatic affection. Lendenweh (our lumbago) is, by some German authorities, described as an idiopathic tonic cramp of the quadratus lumborum.

Could chilblains and cramp be early manifestations of the rheumatic diathesis? or, at all events, indicate a proclivity to

rheumatism? They depend on vasomotor disturbances, which lie at the root, I suppose, of all these phenomena.

My attempt at relating these few cases, if, indeed, we have been dealing with genuine manifestations of rheumatism, will, I hope, have served at all events to show that one can see the most varied forms of erythema arising from one and the same ætiological factor.

The most appropriate name to give them will assuredly be the most comprehensive, and the term "erythema multiforme exudativum," invented by Hebra, appears to me to be the most suitable. Before his time erythema urticatum or urticaria, roseola, erythema papulatum, nodosum, annulatum, marginatum, &c., &c., were each one considered as different diseases, in so much that, as he pointed out, there were more names than diseases to give these names to. To his genius is due the credit of having grouped these various forms together under the generic term of "Non-Contagious Polymorphous Erythemata."

The nature of the anatomical process in all the varieties enumerated under this head is identical, and consists of capillary hyperæmia of the superficial layers of the skin, with stasis and more or less exudation. Sometimes this is further accompanied by actual hæmorrhage, as evidenced by ecchymotic colouring—*e.g.*, the so-called peliosis rheumatica or rheumatic purpura.

In discussing the ætiology of these eruptions Hebra says that, when some toxic element cannot be adduced, "it is safe to assume that temperature and clothing have great influence in causing them."

Dühring, in his work on "Skin Diseases," says that erythema multiforme generally makes its appearance in spring and autumn, and that it is often accompanied by rheumatism.

Trousseau has two interesting lectures on eryth. nodos. and eryth. papulatum respectively, in which he points to the rheumatic connection, and quotes Bazin, who taught that they were manifestations of the "arthritic diathesis" [*i.e.*, hereditary predisposition to rheumatism], Sir Thomas Watson, in his lectures, speaks of "E. nodosum being in one case followed, in another preceded, by rheumatism."

The observation is by no means a recent one, yet it deserves more consideration at our hands, I believe, than it generally receives.

The importance of making a correct diagnosis in these cases

is too obvious to be dwelt on; the possibility of being always able to make it is more questionable.

In conclusion, I should like to transcribe here a practical rule bearing on our subject. It is from the pen of Dr. Cheadle:—"Always in the case of children, whether unmistakable arthritis be present, or there be merely a stiff and painful tendon, or an unexplained febrile attack, or chorea, or tonsillitis, or erythema, it is most essential to bear in mind the possibility of having to deal with rheumatism and to examine the heart carefully day by day."—"Keating's Encyclopædia."

Case XII.—A. M. At a previous meeting of the Society a case was shown which served as an introduction to the foregoing paper. It was that of a young woman, aged twenty, the subject of a chronic form of urticaria.

The integument was generally the seat of the complaint, but now and then the buccal cavity, and, to judge from the pain in the gullet and in the stomach during and after the ingestion of food, the mucous membranes of these parts were liable to become likewise affected.

There was a systolic murmur heard at the apex, and she complained at times of pain in the præcordial region as well as in the limbs.

The urticaria itself did not give rise to much inconvenience, except when the feet or the hands were attacked, specially when on the plantar or palmar aspects. This was apt to come on frequently, lasting for several hours, and it generally rendered her unfit to follow any employment.

The accompanying notes are an abstract from the account of her case in the registry of St. Mary's Hospital, where she was an inmate five years ago:—

"Dr. Cheadle, 1887. 1227. A. M., admitted Nov. 7; discharged, Dec. 2, 1887. Chorea. *Family history*—Father had rheumatic fever once; no other history of rheumatism. *Personal history*—Had chorea eight years previously. In April, 1887, was treated for 'pains in all her joints, and spots about size of a two-shilling piece all over her.' *Present illness*—Choreic movement first noticed about fortnight before admission. *Condition on admission*—Somewhat anæmic; otherwise nothing noteworthy. Choreic movements well marked; general. Has 'urticaria over her hands, chest and back in parts.' Heart—systolic murmur at apex conducted into axilla; second sound accentuated over pulmonic area.

"*Nov.* 13.—Rash has completely disappeared; has had pains in joints; soft flowing systolic murmur still audible at apex; second sound reduplicated.

"*Dec. 2.*—Choreic movements having entirely ceased, patient was to-day discharged.

"*Temperature Chart.*—Nov. 7th, 98°; 9th, 99·5°; 10th, 98°; 11th, 99·4°; 12th, 99·8°; 13th, 100°–102°; 14th, 101°; 15th, 101°–101·5°; 16th, 99·5°–100·5°; 17th, 99°; 18th, 98° and thence onward normal."

BROWN-SÉQUARD'S ELIXIR.

As this eminent physiologist is re-asserting with great confidence the therapeutical efficacy of testicular and other glandular preparations, it may be interesting to cite negative evidence on the subject. *Lo Sperimentale* (of Florence) quotes from the *Riforma Medica* the results of a long series of experiments with the "liquido testicolare di Brown-Séquard," undertaken by S. Massalongo. He concludes that the testicular liquid of young and healthy mammals, injected hypodermically, has not the slightest effect upon the human organism; that the trifling and transitory modifications of circulation, respiration, temperature, and muscular power are explicable by the excitement and tension of the subject's mind; that any rare and transient improvement observed in the treatment of various organic diseases by this method was due to suggestion and the influence of imagination, to which causes alone is to be attributed the cure of some cases of hysteria and neurasthenia.

NATURAL FOOD.

Under the title of "Natural Food," a paper is being published by a new sect which has separated off from vegetarians on the important subject of starch. Those of the new departure teach that the food of primeval man consisted of fruit and nuts of sub-tropical climes, and that to these he ought to return. As it is not easy to get a suitable supply, the supplemental use of eggs and milk is permitted. Starch, however, is prohibited, whether as "cereals, pulses, or bread;" it is granted that they are in a measure fruits, but it is supposed that artificial selection has raised them far above their natural position. Probably a new prophet will arise in the sect to prohibit the use of cultivated fruits, as artificial selection has certainly altered them, and that haws, sloes, and crab-apples, in their seasons, will be recommended. So badly is starch thought of that meat is considered a lesser evil.

PENTAL.

N. Kleindienst (*D. Ztschrft. f. Chir. Vratch.*) found that of twelve persons anæsthetised with pental, albumen was found in the urine of eight; in three who suffered from albuminuria, the amount of albumen was largely increased, and the urine constantly contained hæmoglobin.—*Les Nouveaux Remèdes*, No. 9.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Psychopathia Sexualis, with Especial Reference to Contrary Sexual Instinct: A Medico-Legal Study. By DR. R. VON KRAFFT-EBING. Authorised Translation of the Seventh Enlarged and Revised German Edition, by CHARLES GILBERT CHADDOCK, M.D. Davis & Co.: Philadelphia and London. 1893.

IT may seem to be the statement of a self-evident proposition to say that a great deal of information about a book may be derived from its title page, yet not only does the modern lady novelist cast about for a title which shall convey no inkling of the contents of her work, but we have been sometimes treated to a philosophical disquisition under the name of a discourse on tailors. Nor is this mode of using language to conceal the thoughts a mere modern invention, for it was adopted, in the headings of his chapters at least, by no less ancient and venerable an authority than the historian of that incomparable gentleman, Don Quixote de la Mancha. We may, therefore, be pardoned for pointing out what is shown in the title of the work before us. The original author of the book, the great Viennese Professor, is probably the most distinguished clinical authority in psychiatric medicine who has written in German since the days of Griesinger. He tells us in his preface that he felt necessitated to employ a learned title for his book, in order that it might not be read by persons for whom it is not designed. How widely this end has been missed will presently appear, but, we may ask, why the first words of the title should take a classic form when those immediately succeeding them, and showing at once the nature of the subject, stand in the vulgar tongue? Used in this way the learned words only serve to stimulate curiosity.

The translator is a well-known American alienist. We do not approve of the odious "superior" tone in which some people are accustomed to speak of our American cousins; but we must say we hope if an Englishman had thought well to translate this work he would have been more tender to his mother-tongue than

Dr. Chaddock occasionally proves himself. A literal translation is not always an elegant or even an exact one. "Rheumatic Fever, with especial reference to Hyperpyrexia," as the title of a book, would hardly be quite correct English. Again, "contrary" does not exist as an English adjective in the sense in which it is here used. To be sure we say "contrāry" with jocular politeness to avoid calling a person perverse; but, in spite of Arundo Cami and his "tota contraria," and the well-known lady's epithet which he thus translated, "contrāry" is not English, and "perverse" or "perverted" is the proper rendering of the German "conträre."

So much for the title page. The substance of the book begins with what the author calls "a fragment of the psychology of the sexual life." Many of the philosophical and historical reflections contained therein are thoughtful and well expressed, but there is little that is new. Sometimes there occurs that restatement of a problem which thinkers so often mistake for a solution. Thus, speaking of the connection between religion and sensuality, the author says—"The well-established relations between religion, lust, and cruelty, may be comprehended in the following formula:—States of religious and sexual excitements, at the acme of their development, may correspond in the amount and quality of excitement, and, therefore, under favouring circumstances, one may take the place of the other. Both, in pathological conditions, may become transformed into cruelty." *May* be comprehended, &c.: perhaps so, but first we must comprehend the formula. So much nonsense has been talked about reversion to older types that one hesitates to suggest the explanation which a thoughtful friend has offered to us of the nexus between cruelty and lust in degenerate persons—namely, that in the earlier stages of the history of the animal the sexual act was associated with the ideas of capture, ideas also connected with seizure of prey, and that in this may lie a deep-seated connection between lust and blood-thirstiness.

The clinical instinct of the author has guided him correctly in the following observations:—"Undoubtedly man has a much more intense sexual appetite than woman. . . . In accordance with the nature of this powerful impulse, he is aggressive and violent in his wooing. . . . With woman it is quite otherwise. If she is normally developed mentally, and well bred, her sexual desire is small. . . . She remains passive. This lies in sexual organisation, and is not founded merely on the dictates of good breeding." That the view expressed in the last sentence is true,

is shown by the fact that, speaking generally, the same relation of the sexes exists throughout the entire animal kingdom, and, if it is not trusting the analogy too far, one might say through the whole vegetable kingdom as well. Everywhere the male courts, seeks, or finds the female, and the female is courted, sought, or found; where we cannot suppose an emotion or an instinct, we see the physical analogue—the male moves or is moved, the female remains at rest.

A few pages devoted to physiology do not call for special notice. The connection of the olfactory and generative functions is prominently brought forward. That such a connection exists in certain animals is clear, that it at least occasionally exists in man is probable, but we do not see that the author's examples are of much value as proving this. Flagellation as an excitant of sexual desire is mentioned, and it is pointed out that sometimes the practice of whipping children on the nates induces the earliest excitation of the sexual instinct, and may even lead to masturbation. Readers of Rousseau will remember that his confessions confirm this notion.

The third division of the book treats of the general pathology of the sexual functions, neurological and psychological. Sexual neuroses are divided into three classes—I. Peripheral; II. Spinal; and III. Cerebral. The first (strictly local conditions of the genital nerves) are not dealt with. The second (affections of the erection and ejaculation centres) are briefly spoken of, and the rest of this section treats of the cerebral neuroses. These are again divided thus—1. Paradoxia, *i.e.*, sexual excitement occurring independently of the physiological processes in the generative organs; 2. Anæsthesia; 3. Hyperæsthesia; and 4. Paræsthesia (perversions of the sexual instincts, *i.e.*, excitability of the sexual functions to inadequate stimuli). Under heading 1 are recorded some instructive cases of precocious sexual excitability, and of the painful reawakening of the sexual feeling which so often occurs in old age, particularly at the commencement of senile dementia. The most important and the longest portion of the book is that which treats of paræsthesia. "In this condition there is perverse emotional colouring of the sexual ideas. Ideas, physiologically and psychologically, accompanied by feelings of disgust, give rise to pleasurable sexual feelings, and the abnormal association finds expression in passionate, uncontrollable emotion." Sexual perversion is considered in great detail under various forms.

"Sadism" is the term which Von Krafft-Ebing, following French

precedent, uses for "the association of active cruelty and violence with lust—so named from the notorious Marquis de Sade, whose obscene novels treated of lust and cruelty." This most unholy association ("lust hard by hate") has been observed in many forms in the history of mankind—among the religious rites of savage nations, in the records of lascivious tyrants, in "the mad mock marriage of the Seine" (when the revolutionists used to tie naked men and women together, and with a travesty of marriage ceremonies throw into the river the unhappy wretches thus bound to each other), &c. No very distinct explanation of sadistic sexual excitement is attempted, but judging by references in one or two footnotes, the author seems to think that a certain probability exists that the explanation above referred to (idea of capture with violence associated with the sexual impulse) may be at the root of it. Some seven and twenty cases, many of the most revolting character, are given as exemplifying this condition. In some the connection between lustful and bloodthirsty acts is very close; in others, the incitement to cruelty was originally associated with sexual excitement of a type approaching the normal, and the normal sexual excitant appears to have lost power and given place altogether to bloodthirsty thoughts or acts which, in themselves and alone, became capable of producing sexual excitement and gratification; yet, others exhibit a tendency to sexual excitement at the sight of blood, or in the acting of cruelty, and the association of the two things is in no way clear. (In the last-named class there was originally, no doubt, some obscure association, the clue to which has been lost.) Among this general class (Sadism) the author places certain horrible cases of necrophily and the violation of corpses, also cases of anthropophagy, and cases where sexual excitement is produced in men by subjecting women to strange and disgusting indignities, the central idea apparently being in all the use of force and violence, the inflicting of pain and degradation upon the object of desire. With Sadism are occasionally associated bestial and other forms of perversion, and almost always masturbation in some form.

The direct opposite of Sadism in external form is Masochism,* in which we are told the central idea is that of suffering and being subjected to violence with the design of arousing sexual

* So called from Sacher-Masoch, another writer of filthy novels, in which this particular form of perversion is described or hinted at. One of the best-known novels of the modern French "realistic" (bawdy) school contains pictures of the same condition.

excitement. This condition is also frequently combined with masturbation, and occasionally with perverse passion towards the subject's own sex. Some thirty cases are given, many in great detail. Among these may be mentioned cases in which sexual excitement was aroused in men by getting women to trample upon them, and even to subject to more disgusting indignities. The author contrasts Sadism and Masochism at some length, and explains the latter thus:—"When the idea of being tyrannised over is long closely associated with the lustful thought of the beloved person, the lustful emotion is finally connected with the tyranny itself, and the transformation to perversion is completed. . . . Now and then this abnormality is hereditarily transferred to a psychopathic individual in such a way that it becomes transformed into a perversion."

"Fetichism" is the name by which the author, following Binet and Lombroso, proposes to designate a condition in which lust is associated with the idea of certain portions of the female person (unconnected with generation). or with certain articles of female attire. This is thus explained:—"The first awakening of the *vita sexualis* is associated with some partial sexual impression (since it is always something in some relation to woman), and stamps it for life as the principal object of sexual interest." Cases of this kind have been observed and recorded by Charcot and Magnan, and our author adds several from his own clinical experience.

The remainder of this section, and a very large portion of the book, is devoted to the consideration of perverted (or, as the translator will have it, "contrary") sexual feeling, which is defined as "diminution or complete absence of sexual feeling for the opposite sex, with substitution of sexual feeling and instinct for the same sex." This definition foreshadows the author's main position on this subject, which is essentially expressed in the following passage:—"Notwithstanding a normal anatomical and physiological state of the generative organs, a sexual instinct may be developed which is the exact opposite of that characteristic of the sex to which the individual belongs. . . . . This perverse sexuality appears spontaneously, without external cause, with the development of sexual life, ... and then has the force of a congenital phenomenon." This is identical with the statement of Ulrichs, who first described this condition, an account of whose writings may be found in Caspar. Our author has collected a very great number of cases. Page after page of his book is filled with the statements, confessions, and reports by patients, and the

loathsome details often given make one suspect that these wretched persons took a delight in recounting as well as in enacting their filthy practices. On the whole, the result is not conclusive. The contention that the potentiality for developments in a perverse sexual direction is innate in some men and women—in other words, that some people are congenitally endowed with the instinct of the sex to which they do not belong, is on the face of it so contrary to the common experience of mankind, and apparently to reason, that before we can accept it, we must have proofs of no ordinary clearness. Two facts, which he himself states, induce us to reject the conclusions arrived at by Professor Von Krafft-Ebing. First, with regard to masturbation, in the vast majority of his cases there is a distinct and unmistakable history of the early practice of this vice. In others, masturbation is probable, though not mentioned. In others, it is categorically denied, but these are very few, and we all know that confessions of this class are very unreliable, and that cases in which there is a strong sexual element are just the cases in which, though there may be even disgustingly full confessions, the one essential matter may be cloaked or omitted. Besides, the reminiscences of most, even honest, people as to their early sexual life are not very reliable, and are apt unconsciously to be distorted by subsequent experiences. We should specially fear this in a case where the patient strongly wished to be told that he was not a criminal but the victim of his organisation. That the troubles of these patients are generally heightened by their tendency to masturbation the author recognises. Secondly, besides the frequency of masturbation and the abnormally increased sexuality which his cases exhibit, the author points out that many of them were complicated with other forms of sexual abnormality—Sadism, Masochism, and Fetichism. As these are otherwise accounted for, Fetichism particularly appearing to be clearly accidentally acquired, it would appear probable that the form of disturbance now under consideration falls within the same category.

It seems to us that there is a more reasonable explanation for all this, and one which is none the worse for lying on the surface. The sexual instinct when it first arises is perfectly indefinite in its aim. This is the case among healthy children. It is, perhaps, even more so among neurotics, among whom, no doubt, it often appears too early—that is, before the other mental faculties are developed in proportion, and sometimes with undue force. Every

one knows of the various dirty acts which boys are apt to indulge in with the incipience of puberty, before there is any distinct impulse towards the opposite sex. No doubt it may happen not infrequently that when boys give way to masturbation at this time, a form of arrested or perverted mental development may take place, and men may continue, boy-like, to take more interest in their own sex than in the opposite; or their passions having received some accidental warp, which the weakened neurasthenic mind of the masturbator is unable to rectify, may continue to develop in an abnormal direction, and centre round objects unconnected, or only casually connected, with the proper application of the sexual function.

We are disposed to think, indeed, that too much labour has been wasted by the distinguished author of this treatise in investigating with his incomparable clinical minuteness and skill what are probably in truth merely the rarer and more disgusting forms of masturbation. Professor v. Krafft-Ebing is one of the greatest living authorities in forensic medicine in connection with mental diseases, and perhaps the unpalatable subject of this book required to be studied from this point of view, but from a strictly pathological standpoint we fail to see how the pæderast or the man who practises mutual masturbation differs from the man who spontaneously acquires the habit of the solitary vice and seeks no other mode of sexual excitement. Such cases are not rare, and if the "urning's" plea is to be accepted, why might not they put in a similar one?

In the therapeusis of the conditions he has described, the author places much reliance on hypnotic suggestion, and mentions striking cases in his own experience and that of Moll in confirmation of his views. That this valuable agency should prove of service here may well be true, but surely congenital mental states, congenital malformations of the organic instincts, will not readily and permanently yield to hypnotism.

The two last sections of the book are given to the consideration of pathological sexuality, as it appears in the various forms of mental disease, and of the same condition in its legal aspects. They are like the earlier portions—over-loaded with details, often of a very unpleasant character.

There are certain reasons which make us regret that this treatise has been translated, though no one can deny its clinical ability, and though the character of its author places his motives above

suspicion. From the translator's preface we quote a portion of an exculpatory pronouncement by Schrenck-Notzing—"To be sure the appearance of seven editions could not be accounted for were its circulation confined to scientific readers." A little way on in the book we find in the confession of a patient a statement that the writings of Sacher-Masoch have done much to develop perversion in those predisposed. If the public take a "pornographic interest" in the work before us, as we are told by Schrenck-Notzing, may it, too, not do harm? Again, in another confession, a wretched urning tells how he gave a copy of "Psychopathia Sexualis" to a comrade, seemingly to console him. A similar individual, writing to the author from London, quotes his book with which he was apparently familiar. We can hardly think that the horrible stories, of which it is full, can be beneficial for the general public, and we fear that, by the class with whom it deals, it may be put to the vilest use.

The translation of such a book is difficult, but we cannot altogether congratulate the translator. The following is very crabbed:—"Pathology has no easy task, in the single case, to decide, &c." This means: "has no easy task to decide in an individual case, &c." "A lady who was afflicted, mornings, with frightful attacks of erethism," is not good, and the son of a general who "was raised in the country" might not have been spoken of as if he was an acre of turnips. We are not sure how far the curious views of the original author as to the secrecy accompanying the use of Latin are to be blamed for this, but a grotesque effect is produced by the use of such words as *cum uxore* in the middle of an English sentence, and we cannot see why a woman should be designated a prostitute in one line and a *puella* in the next, and a *puella publica* a few lines lower down. On the whole, however, though we have only had opportunities of comparing it with the earlier editions of the original, and have not had the advantage (if it be an advantage) of reading "the seventh enlarged and revised German edition," we are inclined to believe that this translation has the merit of faithfulness if not of elegance.

A Contribution to the Pathology of the Vermiform Appendix. By T. N. KELYNACK, M.D., Pathologist to the Manchester Royal Infirmary, &c. London: H. K. Lewis. 1893. Pp. 223.

DISEASE of the vermiform appendix has only recently come to be recognised as the cause of the vast majority of cases of inflamma-

tion in the right inguinal region, hitherto vaguely described under the terms typhlitis and perityphlitis. It is, therefore, with great pleasure we welcome the admirable work before us. The author has spared no pains in collating all that is best in the now somewhat voluminous literature of the subject, while he has added several important original observations.

In an interesting chapter on the histology of the vermiform appendix, attention is directed to the relatively large amount of lymphoid tissue in the appendix as compared with other parts of the intestinal tract, first pointed out by Watney, and the resemblance of this structure to the tissue of the tonsil is insisted on. This is a point of considerable interest when we remember that suppuration in both these structures usually occurs before the age of thirty years, and, as the author shows, the similarity is further pronounced by the fact that the enteroliths found in some cases of appendicitis have the same chemical composition as the concretions frequently met with in the tonsil.

Although mainly pathological, there is an excellent chapter on the clinical aspects of appendicitis, and the author very wisely protests against indiscriminate operation in this disease. The lines laid down for deciding as to purely medical or surgical treatment form one of the most useful sections of the work.

There are 21 illustrations, but the original ones are very crude—neither accurate representations nor simple diagrams. These imperfections are further accentuated by the reproduction of some of Mr. Bland Sutton's beautiful figures.

The work concludes with a very complete bibliography and a fair index.

Diseases and Injuries of the Ear. By SIR WILLIAM DALBY, F.R.C.S., M.B. Cantab.; Consulting Surgeon to St. George's Hospital. Fourth Edition. 1893. Pp. 276. With 8 Plates.

FEW manuals on special subjects are so well written as this. These lectures of Sir William Dalby are clinical in the best sense of the word; they are simple for the beginner, clear for the surgeon, and sound and deep for the specialist. The plates of the membrana tympani under various conditions are beautifully depicted.

No volume we know of will in so short a time teach so much, and this knowledge is imperceptibly absorbed from its pages without any efforts of the memory, or much repetition of the text.

No earnest student should ever "qualify" without reading these interesting lectures once through. One omission which we notice is that, in his able chapter on foreign bodies, no mention is made by Sir William of the intense vertigo and feeling of intoxication sometimes produced by syringing the ear, especially in old people. This one should ever remember and guard against.

A Manual of Chemistry: Inorganic and Organic, with an Introduction to the Study of Chemistry. For the Use of Students of Medicine. By ARTHUR P. LUFF, M.D., B.Sc. (Lond.), M.R.C.P.; Fellow of the Institute of Chemistry; Fellow of the Chemical Society; Physician to Out-patients in St. Mary's Hospital, and Lecturer on Medical Jurisprudence and Toxicological Chemistry, (late Demonstrator of Chemistry) in the Medical School. With numerous engravings. London: Cassell & Company. 1893. 8vo. Pp. 525.

IN a convenient and judiciously prepared manual of 525 pages, the author of this volume has furnished the medical student with an excellent guide to the chemical department of his curriculum. As he observes in the preface—"To gauge correctly the wants of the student of medicine, and to appreciate rightly the position that must be assigned to the study of chemistry amongst his multifarious work, can, in my opinion, be best done by one who has himself been through the courses of study and work required for qualifying in medicine." With this opinion we entirely concur. We congratulate Dr. Luff on the result of his labours. We think that he has carried out his task thoroughly and well, and has placed in the hands of the hard-worked medical student of the present period the best chart hitherto published in the English language to guide him through the labyrinthine mazes of this rapidly growing science.

Like all the other volumes of this series, the one before us is beautifully and clearly printed on excellent paper, and does full credit to the taste and enterprise of the well-known publishing firm of Messrs. Cassell & Co. The text is arranged in five parts, of which the first is an "Introduction to the Study of Chemistry," the second is devoted to "The Non-metallic Elements and their Principal Compounds," the third to "The Metallic Elements and their Principal Compounds," the fourth to "Organic Chemistry," and the fifth to "Chemical Problems, Weights and Measures," &c.

For the style and treatment of the various sections of the subject-matter we have nothing but unqualified praise. In the first part of the book the author gives an excellent summary of the present state of our knowledge of the mysteries of chemical physics. The "atomic theory," "laws of chemical combination," "quantivalence," "empirical, molecular and constitutional formulæ," are treated with a crystalline charm of diction which we do not remember to have seen surpassed anywhere. This fact has enlisted our sympathies more than any other connected with the book, for we well remember—and remember with bitterness of recollection—that these general subjects were the ones to the understanding of which so little assistance was afforded us in the perusal of the text-books of our own student days.

The second and third parts of the manual give the properties of the various elements and their principal compounds. The more important laboratory experiments are described, and a well-selected series of woodcuts illustrate the text at appropriate intervals. The preparations of the metals from their respective ores is described in brief; and, although an acquaintance with metallurgy can hardly be considered necessary to the mental equipment of the medical student, a slight knowledge must possess an interest to every reader about to investigate the properties of the corresponding elements.

The fourth part, which deals with the facts of the rapidly expanding field of organic chemistry, gives a selection of the laws and facts of this department of the science which deserves special commendation for the discrimination displayed by the author in choosing the material most essential for the requirements of the medical student from the vast storehouse to which he had recourse. Under the head of "Rarer Organic Compounds" the author, in the concluding chapter of this part, gives attention to a series of the more important newly-discovered compounds which have been found of special importance in the armamentarium of the therapeutist.

In Part V. the author has collected an instructive series of chemical problems, with their solutions, "which for the sake of convenience will be arranged in three groups, viz.:—Group I. Chemical problems involving weight calculations only. Group II. Chemical problems involving both weight and volume calculations. Group III. Chemical problems involving volume calculations only." Then follows a table of weights and measures; and, lastly, tables

of the usual tests for the determination of the presence of the various metals and acids in solution.

After what has been already said we will only, in concluding, express the opinion that we know of no student's hand-book in the language which more fully meets the requirements of the class of readers for whom it is intended.

Alcohol and Public Health. By J. JAMES RIDGE, M.D., and M.D. (State Medicine) Lond.; B.S., B.A., B.Sc. Lond.; Medical Officer of Health, Enfield. Second Edition. London: H. K. Lewis. 1893.

THE advocates of total abstinence are still working hard in the field of social reform. The evils of drinking alcohol in large quantities are hardly disputed by any one; the temperance party are determined to educate the rising generation in the belief that the inhibition of even small portions of the noxious beverage is necessarily followed by results harmful to both body and mind. Sir Benjamin Ward Richardson, M.D., F.R.S., who has lately been interviewed on this important question by a representative of the *Christian Commonwealth*, is reported to have said—"Drunkenness is a disease. I would isolate such cases at once. The quicker they leave off the better. I have never seen any mischief arise from making patients abstain altogether straight away. They grumble and complain, of course, and tell you how they feel it, and soforth, but I have never in my life known any physical mischief arise from it. Patients are treated as abstainers in the Temperance Hospital. They come to us there with all kinds of diseases; we have quite as many non-abstainers as abstainers, and I never find any difficulty. . . I never found a single patient who asked for stimulant." As a commentator on this report pertinently observes—"Perhaps it would require even more than the hardihood of the customary hospital patient to call on the apostle of non-alcoholic medication for a drink."

In the preface to this (the second) edition of his *brochure* on the alcoholic question, the author takes up the position of maintaining that "it is obligatory on the part of the defenders of alcohol-drinking to prove that it is harmless, and that till this is done we should advise total abstinence as a certain means of preventing all the evils, small or great, which result from its use." He has taken great pains to show experimentally the evil results of the absorption,

from time to time, of small quantities of alcohol on members of the vegetable kingdom. He anticipates and deprecates the objections of critics who are likely to question the value of his inferences. "The effect of alcohol on growing plants does not necessarily prove that it is injurious to animals; but when an injurious effect on animals has been otherwise demonstrated, then the gradually deteriorating influence of small quantities of alcohol on growing plants becomes a strong confirmation, and illustrates the fact that strong doses which do not show any immediately pernicious influences will, if continuously taken, at length be seen to be injurious."

The gigantic importance of the alcoholic question from the financial and political, as well as from the sanitary and moral, points of view, is abundantly proved by the fact announced in one of the opening sentences of the introductory chapter—"The expenditure on alcoholic liquors during the year 1891 amounted to no less a sum than £141,220,675. Even if the liquor which this amount represents had been evenly distributed among all the population, it could not have been taken without producing some effect for good or evil. But it is notorious that a very large part of the population, probably two-thirds, including children and adult abstainers, does not take any, and therefore the whole amount is divided among one-third of the nation." Surely the question of the value of the use of the different preparations of a beverage which is consumed on so gigantic a scale must be one of the most important that can agitate the minds of the British democracy.

Ever since the date of the plantation of Noah's vineyard, the use of alcoholic stimulants has formed a very important factor in the history of the human race. As we write there lies before us a copy of a volume published in London in the year 1743, with the following remarkable title:—"*Ebrietatis Encomium: or, the* PRAISE OF DRUNKENNESS. *Wherein is authentically and most evidently proved, The* Necessity *of frequently* getting Drunk; *and, That the* Practice of getting Drunk *is most* Ancient, Primitive, *and* Catholic. Confirmed *By the* EXAMPLES *of* Heathens, Turks, Infidels, Primitive Christians, Saints, Popes, Bishops, Doctors, Philosophers, Poets, Free Masons, Gormogons, *and other tope-ing* Societies, *and Men of* Learning *in all Ages*. *By* BONIFACE OINOPHILUS. De Monte *Fiascone*. A. B. C." In the preface to this remarkable volume the author assures his critics, "I declare that I did not undertake this work on account of any Zeal I have for

WINE, you must think, but only to divert myself, and not to lose a great many curious Remarks I have made upon this most *Catholic Liquid.*"

It was well said by those of classical times, *Nullo vitio unquam defuit advocatus.* The author of *Ebrietatis Encomium* has collected from far and near the best arguments and *bon-mots* which have been published in favour of the practice of intoxication for the past three thousand years or so. Quasi-religious enemies of Cardinal Mazarin and of Oliver Cromwell, respectively, wrote pamphlets skilfully defending the thesis that "killing is no murder" when the victim is properly chosen; and an archbishop of the Catholic Church wrote an elaborate poem in praise of the practice of sodomy. The possibility of escaping for even a few waking hours from the overburdening sorrows and disappointments of life undoubtedly forms one of the great temptations to over-indulgence in alcoholic stimulants. So long as human woes are so widely distributed as they are at present—and have been so far back as history dates—we can prophesy with confidence that the demand for spirituous beverages will exist all over the world, and that the supply will be found equal to the demand. The prevalence of this depressing idea of the brevity of human enjoyments, and the hankering desire to escape from the cares of life, was well illustrated in the barbarously philosophical practice of the Scythians, who drank out of skulls; of the Egyptians, who exhibited skeletons at their feasts; and of the Romans, who used to cry out at their drinking festivals—*Amici, dum vivimus, vivamus.* The favourable opinions of Asclepiades and Hippocrates, of Homer and Plato, of Ovid and Horace, of Avicenna and Rhases, are all equally familiar to the author of this heterodox volume. The philosophic recommendations of Aristotle and of Plutarch, of Seneca and of Cato, of Cicero and of Scipio, are all introduced with the most pointed effect. Procopius of Gaza, and a French clerical authority—Father Frassen—are quoted in favour of the opinion that the plantation of vineyards and the imbibition of wine were familiar practices among the earth's inhabitants long before the Flood; and that, accordingly, Noah has no genuine claim to be the discoverer of the use of intoxicating drink, as he has often been supposed to be. The Divine Founder of Christianity was not an advocate of teetotalism, and St. Paul recommended to Timothy the use of a little wine for his stomach's sake, and his often infirmities.

There is no doubt that the crowding of so large a proportion of

the earth's inhabitants into large cities has gone far in more modern times to multiply enormously the evils produced by over-indulgence in alcohol. The existence of outspoken journalism, and the elaborate compilation of statistics, which now form prominent features of all civilised societies, have made the public fully familiar with the various phases of all the undoubted evils which result from the abuse of strong drink.

Dr. Ridge's booklet is divided into nine chapters, and is furnished with an index of authorities and a subject-index. The author has evidently expended much time and labour in the collection of the physiological and statistical information which go collectively to demonstrate the evil effects of alcohol, whether used in large or in small quantities. He has raked together the evidence of Orfila, Percy, Sir W. Roberts, Beaumont, Ogata, Harley, Schmiedeberg, Prout, Perrin, Fyfe, Vierordt, Lehmann, Hervier, St. Layer, Böcker, E. Smith, Richardson, Parkes, Count Wollowicz, Nicol, Mossop, Scougal, Kräpelin, Münsterberg, Kronecker, and other physiologists, supplemented by valuable original observations of his own, to prove the deteriorating influence of alcohol on the digestion, and on the various mental and physical powers of man. Pathological evidence of equal importance has been collected from equally important sources to show the inevitable effects of over-indulgence. In the third chapter he gives the results of his experiments on the effects of the absorption of small quantities of alcohol on vegetable growth, and in some of the lower forms of animal life. The influence was invariably found to be of a pernicious character. In other parts of this work he demonstrates the erroneousness of the idea that alcohol ever "saves the wear and tear of the body," or enables the drinker to resist the effects of cold, of heat, or of fatigue. Its effects on longevity are demonstrated by a valuable collection of statistical evidence. "Drunkards lose on the average about ten years of life as compared with strictly temperate men." The records of "mortality and sickness from alcohol" (Chap. VI.) are equally striking and conclusive, and the still more painful evidence collected from the annals of "insanity and crime" furnish more powerful weapons for the advocates of total abstinence. "Pauperism, accidents, and inquests," it need hardly be added, add an immense mass of testimony to the evils of the use of strong drink. In the ninth (and concluding) chapter the author replies to the various objections which have been made to the practice of "total abstinence." We feel sure that even if all his

arguments are not accepted as conclusive, the publication of such a work must have a beneficial result. We cordially recommend its perusal to every philanthropist and politician who takes an interest in one of the burning questions of modern civilisation.

A Text-book of Medicine for Students and Practitioners. By Dr. Adolf Strümpell, Professor and Director of the Medical Clinique at Erlangen. Second American Edition, translated by permission from the second and third, and thoroughly revised from the sixth German Edition, by Herman F. Vickery, A.B., M.D., Instructor in Clinical Medicine, Harvard University, &c., and Philip Coombs Knapp, A.M., M.D., Clinical Instructor in Diseases of the Nervous System, Harvard University, &c.; with editorial notes by Frederick C. Shattuck, A.M., M.D., Jackson Professor of Clinical Medicine, Harvard University, &c. With one hundred and nineteen illustrations. London: H. K. Lewis. 1893. Imperial 8vo. Pp. 1043.

In the number of this Journal for November, 1887 (Vol. LXXXIV., No. 191, third series, page 375), will be found an exhaustive review of the first American edition of Professor Strümpell's "Text-book of Medicine." This translation is already used as a text-book, or as a work of reference in some twenty-eight medical schools in America, and, in his preface to the *Sixth* German edition, the author, with pardonable pride, points out that although the fifth edition had been very large, a year's time had brought so pressing a demand for a new one that, in preparing it, he had been obliged to confine hinself to the most essential improvements and additions.

Under such circumstances as these, unfavourable criticism is impossible. But, in truth, apart from some infelicitous renderings of the original German into English scattered throughout the book, we have nothing but praise for this monumental work.

The changes and additions in the edition before us are neither few nor unimportant. A mere enumeration of the more striking will show that both author and translators have successfully kept the text-book abreast of medical progress.

In the section on "Acute General Infectious Diseases," with which the volume opens, influenza now finds a place—"a disease," says Professor Strümpell, "which had almost been forgotten, when the last great epidemic (that of 1889-90) brought it prominently

to medical attention." As to the ætiology of this *pandemic* disease, as he prefers to regard it, the author believes that it depends on the infection of the body with a specific, organised, pathogenic germ, which has, however, as yet evaded discovery. He avows himself a believer in the air-borne theory of the origin of influenza, although he admits that direct contagion may also play a subordinate part in the dissemination of the malady. In the chapter (XIV.) on "Malarial Diseases" in this same section, a most interesting account of the conduct of the *Plasmodium malariæ* is given, in accordance with the researches of Laveran, Marchiafava, Celli, Golgi, and others.

In the chapters on Cholera, Diseases of the Nose and Larynx, Syringomyelia and Diabetes, several important alterations and additions have also been made.

It is only fair to the American editorial staff to mention that a number of new notes have been by them interpolated in the text within brackets throughout the volume. Among the most valuable of these notes are those in the section on Nervous Diseases, for the revision of which Dr. Knapp is responsible. His notes are denoted by the signature "K." At page 679 there is a capital account of Morvan's disease and its relations to syringomyelia. It is signed "K.," and occupies only eight and a half lines of print.

Appendix I., giving a summary of the symptoms and treatment in cases of poisoning, has been much enlarged, and now includes additional paragraphs on poisoning by zinc, iodoform, bisulphide of carbon (workers in rubber factories), coniia, and mussels (*Mytilus edulis*).

We heartily commend to the attention of our readers this great work. It is certainly one of the ablest and most comprehensive treatises on medicine which has appeared for at least a quarter of a century.

The Mineral Waters of Harrogate. By JOHN LIDDELL, M.D. Edin.; Physician to the Harrogate Royal Bath Hospital and Rawson Convalescent Home; and to the Convalescent Home of the Sunderland Infirmary. Edinburgh and London: Young J. Pentland. 1893. Pp. 62.

THIS seems to be the "making" of an excellent *brochure* on the mineral waters of Harrogate; but it is at present defective in two particulars—first, in the absence of any meteorological

tables; secondly, in the absence of a map of Harrogate and its environs. No doubt, in the opening chapter on "Harrogate as a Health Resort" allusion is made to the climate of the place, but only in general terms. Details are conspicuously wanting, which is all the more remarkable as full tables of analyses of the sulphur and chalybeate waters are given in Chapter II. on the "Chemical Composition of the Mineral Waters."

Chapter III. contains an interesting account of the action of the waters upon the body generally, while Chapter IV. presents us with a brief statement as to the therapeutics of the mineral waters and of the climate.

The author enjoys exceptional opportunities for observing the effects of a sojourn at Harrogate upon the various classes of invalids who resort thither. He writes pleasantly, and possesses in no mean degree the art of conveying reliable information in clearly expressed language. Not the least recommendation of his little book is the fact that Dr. Liddell avows that he wrote it for *members of the medical profession.*

Tooth Extraction; a Manual on the Proper Mode of Extracting Teeth. With a Table exhibiting in Parallel Columns the Names of all the Teeth, the Instruments required for their Extraction, and the most approved Methods of using Them. By JOHN GORHAM, Member of the Royal College of Surgeons, London; Fellow of the Physical Society of Guy's Hospital, &c. Fourth Edition. London: H. K. Lewis. 1893. Fcap. 8vo. Pp. 43.

THE author seems to have taken great pains in this pamphlet in describing accurately the different methods of extracting the several teeth, and has many invaluable hints for a general practitioner who has never had any previous hospital practice at this work. He seems still to have a partiality for the key, which is now practically an exploded idea amongst specialists in this branch of surgery. The author seems to have omitted any hints as to what should be the position of the patient during any operation—this being more frequently the cause of a bad extraction due to loss of the proper power which he has so fully gone into.

One operation (p. 18), that of extracting an extensively decayed lower molar by including fangs, gums, lint, and alveolus within the blades of the forceps, does not certainly conform to the present

method of picking out the fangs separately and easily by means of a fine root forceps.

Mr. Gorham's tables as to what deciduous and permanent teeth should be found together at different periods in a young mouth, should be of the greatest service to one not versed in the practical knowledge of this before.

The Transactions of the Edinburgh Obstetrical Society. Vol. XVII. Session 1891–2. Oliver & Boyd. Pp. 294. With Illustrations.

THIS seventeenth volume of the Edinburgh Obstetrical Society's Transactions shows the depth to which obstetrics and gynæcology are studied by the Edinburgh school.

In addition to the very able paper by Dr. Ballantyne on "Fœtal Pathology and Teratology," the most generally interesting articles will be found to be those on "Maternal Impressions," by the same author; the "Date of Impregnation," by Dr. Milne Murray; and "The Influence of Influenza upon Women," by Dr. Felkin.

Dr. Croom's paper on "Asthma Gravidarum" is most instructive.

The specialist will, in this volume, find much that is of the deepest interest.

A Treatise on Nervous and Mental Diseases, for Students and Practitioners of Medicine. By LANDON CARTER GRAY, M.D., Professor of Nervous and Mental Diseases in the New York Polyclinic, &c. London: H. K. Lewis. 1893. 8vo. Pp. 687.

THIS is an ambitious work, which justifies its aims. No important part of the subject of nervous diseases is left untouched. There is evidence throughout of large experience and wide reading, though mental diseases are dealt with too summarily for the needs of any but the general practitioner.

The book is quite up to date, as witness some plates from Professor Frazer's "Atlas of Cranial Topography," a notice of *erythromelalgia*, a chapter on *katatonia*, and one on sexual perversion, partly based on Krafft-Ebing's recently published work. Nor is the style wanting in freshness. It has so much egoism as gives it life; just so much as becomes one who knows what he is talking

about; just so much as sometimes betrays the author into carelessnesses of expression which a more timid writer would avoid. Take this sentence from the preface—"Whether Americans are more prone to nervous disease than other races, or whether it is that our democratic principles set a higher value upon the individual, his comfort and health, than is customary elsewhere, it is yet certain that Europeans, in investigating disease, regard the patient simply as its vehicle, whilst Americans go one step further, and deem the cure all-essential." This challenges criticism on many scores. Is it true that Europeans sacrifice treatment to pathology? Is it true, as implied, that cure can be arrived at without a knowledge of causation? Is it a fact that in America more value is set upon the individual life than in Europe? And where is the logical opposition between the vehicular view so deprecated and therapeutics? And finally, what other way can any disease as a whole be studied than as it affects this or that living thing, which, for the time being, is its vehicle? For practical purposes popular language is correct when it says that a man *bears* his disease as he *bears* his *age* or his *honours*. The sentence quoted is logically inconsequential and wrong in fact. How shall we construe this passage, deprecating the importance of heredity as a constant cause of neuralgia—"I do not believe, for instance, that a person has ever lived who has not had neuralgia at some time, and yet it would not be fair to say that this person could transmit neuralgia hereditarily as could a person who was constantly subject to the malady." These are rare examples of careless writing in a book which is otherwise clear in statement and good in its English.

The anatomy and physiology of the nervous system are concisely treated in the first eighty-three pages. A popular exposition of a mystery comes to grief on page 33, where it is stated that the cerebral centres "are, therefore, simply compartments of the mind, and clinical observation constantly shows that lesion of any one of these centres need not cause mental impairment." Can it be that that of which a part (or compartment) is injured need not be at least partly injured? The author evidently has second thoughts on the matter, for later on he says that "a small (cortical) lesion may seem to a superficial observer to leave the mind unimpaired, when careful examination of the patient will show that this is only seemingly so."

A short chapter on electricity tells with clearness almost all that is necessary to be known about the *technique* of electrical applica-

tions. The reaction of degeneration is discussed somewhat too briefly, and the following statement is inaccurate—"Faradic electricity is the current which flows from one or two cells, but which, by means of various mechanical devices, is interrupted constantly, and made to have more electro-motive force, or much more power of overcoming resistance than galvanism."

In dealing with localisation of brain lesions the crus cerebri is forgotten. The author clings to the useless distinction between hemiopia as a retinal defect and hemianopsia as applied to the defect in the visual field. "A left hemiopia will cause a right hemianopsia," he says, forgetting that etymologically *left hemiopia* signifies good vision on the left side. It is laid down somewhat positively that a lesion of the posterior part of the internal capsule, producing hemianæsthesia, will, if it affects vision, produce hemianopsia on the same side as the anæsthesia—a view at variance with Charcot's, as stated by Bastian, that lesions of the cerebral hemispheres producing hemianæsthesia likewise determine crossed amblyopia, and not lateral hemiopia.

The author claims to have been the first to use cerebral thermometry for diagnosis. He found that the average temperature of the left side of the head is slightly higher than that of the right; and selecting certain "stations," that the average temperature of the occipital station is less than that of the frontal and parietal ones, which are practically the same, and that the temperature of the vertex in the motor area is lowest of all. Any marked reversal of these facts in a person suffering with cerebral symptoms would be in favour of mischief in the part with increased heat. The author has by this method been able to localise new growths in the brain.

The chapters on neuralgia, progressive muscular atrophy, caisson disease, hysteria and neurasthenia are full and interesting. Now and again, on the other hand, a subject seems not to have commanded the author's interest. Cerebral abscess is treated of in a page and a half; pachymeningitis is mentioned only incidentally; the cerebral troubles of lead-poisoning are despatched in a few lines. It is not impressed upon the reader that cases of peripheral neuritis, especially alcoholic, may die rather unexpectedly, nor is any mention made of the striking loss of memory of recent events which so frequently accompanies alcoholic neuritis. In fact, the whole subject of multiple neuritis is poorly dealt with.

The author has no undue consideration for the chronic drunkard,

and objects to the maudlin sentimentality which regards his habit as a disease. With his view we have much sympathy, but not so with his statement about masturbation, that "it is a very common disease with boys, less common with girls." We are more inclined to regard the mental and physical condition brought about by chronic alcoholism, apart from gross lesions, as a disease, than the masturbation of puberty.

In the enumeration of the causes of the various nervous diseases sex is constantly mentioned. Now it seems to us that a factor in man, which is constant and essential, should not be quoted as a cause of disease. Sex is only a *cause* of this or that disease in so far as males or females are more exposed to the causes of such disease—that is to say, it is not a cause at all. Sex is not a cause of cancer of the womb or of orchitis, unless indeed we are content to take for wisdom the statement that uterine cancer cannot occur in a person without a womb, or orchitis in one without a testicle. Still less is sex a cause, even predisposing, of locomotor ataxy, unless we assume that it is in the eternal law of nature that males should, *ipso facto*, suffer more than females from syphilis or other cause of ataxic disease.

In the domain of treatment, value is attached to ergot in inflammatory conditions of the cord; in epilepsy, to borax in combination with bromide of potassium; to quinine in neuritis, neuralgia, and other conditions which may be due to, or kept up by, a malarial taint; to massage, hypnotism, and electricity, in suitable cases. Such may be said to be the highest flights of treatment, not perhaps unemulated in Europe, which this book reaches. But Professor Gray's work is none the less valuable because his experience is at variance with the exaggerated terms of his preface. It is a thoroughly practical work, which will be of use to the student, the general practitioner, and even the neurologist. It should be added that it contains one hundred and sixty-six illustrations, most of them original and all good.

Bulletin of the Harvard Medical School Association. No. 4. Boston. May, 1893.

THIS Bulletin, we are told, is intended to give to the Harvard graduates a brief account of certain new methods of teaching which have arisen in the various departments of the School. It also contains short papers on matters of general interest. In the

present number are six papers. The first, by Dr. Cheevers, on the "Professional Horizon," while recognising the great advances which have been made, deprecates the "unbalanced predominance of operative surgery which has destroyed all natural and harmonious proportion between operations and surgery, and between surgery and medicine;" also "the fatal facility of the habit of consultations and the narrowing spirit of specialism."

The second paper, by Prof. Bowditch, describes the interesting exhibits of the Harvard Medical School at the Chicago World's Fair.

The third paper, by Prof. Richardson, is on the "Obstetrical Department of the Harvard Medical School." This department has lately undergone great changes, chiefly in the increased amount of clinical instruction introduced. Each student is required now to attend and report on at least six cases. This seems to us in Dublin a small number, but it is only since 1883 that any personal attendance has been required in Boston.

Professor Councilman, in the next paper, describes the pathological department, which seems to be in all respects arranged on the best possible principles. A plate is given, showing the class in pathological histology at work.

Dr. Mason contributes a paper on diphtheria and scarlet fever at the Boston City Hospital. The great importance of bacteriological investigation in all doubtful cases of diphtheria, and of isolation of such cases until the diagnosis is certain, is strongly pointed out.

Finally, Dr. Harrington describes the methods adopted in the teaching of materia medica and therapeutics.

The Bulletin is magnificently printed on thick paper, and illustrated with handsome plates showing views of the laboratories and class-rooms. It cannot fail to have a great interest for old students of the celebrated Harvard School, as well as for others interested in the advance of modern medical teaching.

The Structures in the Mesosalpinx; their Normal and Pathological Anatomy. By J. W. Ballantyne, M.D., &c., and J. D. Williams, M.D. Edinburgh: Oliver & Boyd. 1893. Pp. 51.

In this work the authors give the results of their examination of 220 broad ligaments. We find here probably the most accurate and

exhaustive description that has ever been given of the anatomy of the Fallopian tubes, and of the organ of Rosenmüller. The pathological descriptions also are full of interest. The whole paper is of great value, particularly at the present time, when the so-called uterine appendages are so frequently the subject of operative interference.

The Johns Hopkins Hospital Reports. Report in Pathology. III. Baltimore: The Johns Hopkins Press. 1893. Pp. 147.

THIS number of these valuable reports contains five papers. The first, by Dr. Simon Flexner, on "Multiple Lympho-sarcomata," describes the *post-mortem* appearances in two cases, in both of which a great development of lymphoid tissue had taken place in the intestinal tract. In one of these cases the patient, a man aged twenty-seven, had suffered for several months from gastro-intestinal symptoms; in the other, a child died suddenly of cerebral hæmorrhage, having never manifested any symptoms pointing to lesion of the digestive organs. The morbid conditions are very fully and carefully described and illustrated by several good drawings. It is argued that although differences were present, the two cases were similar, and both belonged to the class of lympho-sarcomata, and had an infectious origin due to a specific micro-organism. A most extensive and elaborate review of the literature of the subject adds greatly to the value of the paper.

The second paper, by Dr. Henry J. Berkley, contains an anatomical research on the "Cerebellar Cortex of the Dog." This is, no doubt, a valuable contribution to our knowledge of this difficult subject. A good plate illustrates the text.

The third paper, by Dr. Councilman, describes a case of chronic nephritis in a cow presenting many remarkable features. It is a definite focal disease caused by a bacillus, which is found only in the foci, where it causes necrosis and intense degeneration of the epithelium. Outside the area of degeneration is a zone of granulation tissue apparently produced by proliferation of the cells of the blood-vessels, accompanied by proliferation of the epithelial cells. There is little, if any, tendency to breaking down or formation of abscess. It is considered most probable that the bacilli entered into the kidney by the urinary passages. To this paper also a beautifully executed plate is appended.

The fourth paper, by Dr. H. L. Russell, gives an experimental

investigation into bacteria in their relation to vegetable tissue. This is a paper of great importance, and one which cannot fail to interest pathologists.

The last paper, by Dr. W. J. Howard, jun., gives an analysis of 105 cases of heart hypertrophy from the autopsy records of the Johns Hopkins Hospital. These were met with in 360 autopsies made between the opening of the hospital in May, 1889, and October 1st, 1892.

The following table gives the relative frequency of the conditions producing heart hypertrophy :—

Arterio-sclerosis -	in	62	cases, or	59·0	per cent.
Nephritis - -	„	14	„	13·4	„
Valvular lesions -	„	13	„	12·4	„
Adherent pericardium	„	8	„	7·6	„
Work - -	„	4	„	3·8	„
Tumours - -	„	2	„	1·9	„
Aneurysm of heart-wall	„	1	„	0·95	„
Hæmic plethora -	„	1	„	0·95	„
		105		100·0	

The great frequency of arterio-sclerosis is strikingly shown by this table.

The Physiologist's Note-Book; a Summary of the Present State of Physiological Science, for the Use of Students. By Alex. Hill, M.A., M.D. London: Charles Griffin & Co. 1893. Pp. 200.

The author, complaining justly of the difficulties which the student experiences from the large size to which modern physiological text-books have grown, tells us that "The object of the note-book is to assist the student in codifying his knowledge, not to diminish the need for the larger text-books, much less to take the place of lectures and laboratory work." The book differs in all respects from what are known as cram-books. Its size is such as to make it inconvenient to smuggle into the examination hall. It does not teach dogmatically, but everywhere deals with the arguments of physiology, giving the logical sequence of the points of the arguments in a form in which they are easy to follow. It is accurate and very full, and is copiously illustrated with drawings, diagrams, and tables, many of which are new and ingenious. The

pages are interleaved with blank sheets for further notes, and a running bibliography is given, referring however only to English papers and books.

Of course a book of this kind, where, as we are told, every word not essential to clearness is carefully struck out, is not an attractive one to read, and we do not think that any student would do well to start his physiological studies by reading it; but of its usefulness to those who have made some progress, and who require to refresh their memories and arrange their ideas, there can be no question. Not only to students, but to many teachers also, it will be a welcome volume, for there is scarcely a page from which useful hints may not be got.

Hypnotism, Mesmerism, and the New Witchcraft. By Ernest Hart, formerly Surgeon to the West London Hospital, and Ophthalmic Surgeon to St. Mary's Hospital, London. London: Smith, Elder & Co. 1893. Pp. 182.

We cannot think that Mr. Hart will increase his reputation by republishing these polemical papers. With natural parental indulgence he softly calls them "somewhat aggressive;" a stronger term might have been employed. The cause of scientific truth—even of that portion of it which Mr. Hart troweth—will not be benefited by scattering "imposture," "fraud," "impostors," "scoundrels," over almost every page; or by sneering at a Society which is striving—not unsuccessfully—to study scientifically phenomena of the highest interest, which had previously been left to sciolists, charlatans, and uneducated theorists. The simpler facts of hypnotism the author is able to accept, though he more than doubts their therapeutical usefulness; but "telepathy" in any form he rejects with dogmatic cocksure-ness which is little less than ludicrous at this time of day. Phenomena accepted as genuine by men of the highest scientific eminence and logical acuteness are brushed aside as unworthy even of investigation; and to those who profess to believe in them is offered the alternative classification of "fools" or "knaves."

Mr. Hart did good work in exposing the cheats by whom Dr. Luys had been "*floué*" in Paris. Similar exposures had been made before, and will be made again. Mr. Hart does not say "*ex uno disce omnes*," but he seems to us to favour the inference that phenomena must be unreal because they are fraudulently

simulated. The fallacy is obvious. It was not uncommon in former days for soldiers anxious for discharge to simulate disease—deafness, for instance, or epilepsy. Did the medical officer, when he detected the "imposture," argue that no one had ever been genuinely deaf or epileptic? It is because others have been deaf or epileptic that the malingerer pretends to be so. It is because certain "psychic" facts, still mysterious and unexplained, and of deepest interest, exist, that "impostors" are found, and ever will be found, to simulate them. The Society for Psychic Research has done something, and will do more, to separate facts from theories, and to bring the former under natural laws. Such a work as this of Mr. Hart will give no help.

Guide to Health in Africa, with Notes on the Country and its Inhabitants. By THOMAS HEAZLE PARKE, Hon. D.C.L., Hon. F.R.C.S.I., &c., &c.; Surgeon-Major, A.M.S.; late Medical Officer to the Emin Pasha Relief Expedition. With a Preface by H. M. Stanley. London: Sampson Low, Marston & Co. 1893. Pp. 175.

MR. PARKE'S former work was so well known, and had been so favourably received, that he could have afforded to dispense with Mr. Stanley's somewhat fulsome preface. No doubt the latter felt that some return was due to the author for the praise lavished upon him in "My Personal Experiences in Equatorial Africa," and was glad of the opportunity to repay in kind. The first sixty pages of this little volume may be passed over without notice. Mr. Parke is no naturalist, and in his other book, so far as we can recollect, there is not a single thermometrical or barometrical observation, nor any addition to our knowledge of African anthropology, ethnology, fauna, or flora, so that his preliminary compilation on these subjects is of little interest or importance. The remainder will certainly be valuable to unprofessional travellers in Africa. The diseases and injuries to which they are liable are briefly and clearly described, and the suitable treatment indicated. Even the shop where they should buy their medicines is prescribed.

In these days, when Great Britain has awakened to her duty of civilising the Dark Continent with missionaries and Maxim guns (solely for the benefit of the natives), this handy little book will be most useful to the wandering British philanthropist.

PART III.

SPECIAL REPORTS.

REPORT ON SURGERY.

By R. Glasgow Patteson, M.B. Univ. Dubl.; F.R.C.S.I.; Assistant Surgeon and Surgeon in charge of the Skin Department, St. Vincent's Hospital.

(*Continued from Page 137.*)

SYNOPSIS:

VII. VOLVULUS OF SIGMOID FLEXURE OF COLON.

Dr. Mayo, in the *Annals of Surgery*, July, 1893, reports a case of this comparatively rare form of intestinal obstruction. The patient was a female lunatic, aged fifty, who suffered from habitual constipation, but was otherwise in good health until April 1, 1893, when she was suddenly seized with vomiting and symptoms of acute obstruction of the bowels, which in spite of treatment grew worse. The abdomen became tympanitic, with quick pulse and moderate fever. On the evening of the third day, when Dr. Mayo saw her, she was lying in bed, with her knees drawn up, her face pinched, and expression anxious. Pulse 114, and temperature 100°. Abdomen exceedingly distended, especially in the centre, where there was a peculiar ovoid enlargement of great size. Under chloroform, the left hand was introduced into the rectum, and a tight constriction was felt at a depth of about eight inches just to the left of the sacral prominence. A few hours later, under ether, an incision was made in the linea alba below the umbilicus, and a huge distended viscus at once presented. Its size was so great that at first it was thought to be the greatly distended stomach, but

was recognised as the colon by its glandulæ epiploicæ and longitudinal bands. An incision was made into it, and a large quantity of gas and some fluids were evacuated, sufficient to relieve the distension and allow careful examination, which showed one complete turn of the sigmoid upon itself from left to right, and a crowding of a considerable portion of the transverse colon into the right pelvic region. The balance of the colon and the small intestines were but moderately distended. The confined part of the sigmoid flexure was dark and congested, it having furnished the greater part of the previous abdominal distension. A few Lembert sutures closed the incised bowel, and reduction with replacement was, with moderate difficulty, accomplished. As soon as the patient had recovered from the anæsthetic ten grains of calomel were administered, followed in a few hours by profuse discharge from the bowels and an uneventful recovery.

This case is of interest in connection with one brought before the Surgical Section of the Royal Academy of Medicine in Ireland during the past session by Mr. M'Ardle, and published in the *Dublin Journal of Medical Science*, February, 1893. The patient was a young lady, aged 22 years, who had been suffering from pain and complete constipation for four days. Medical treatment had failed to give relief. Operation revealed the presence of a volvulus, embracing the descending colon and the sigmoid flexure. The colon above the constriction was enormously distended—"almost to bursting"—and it was quite impossible to manipulate the bowel until a free incision had been made into it along one of the longitudinal muscular bands and an enormous quantity of gas and fluid fæces evacuated. The volvulus was then reduced with difficulty, owing to the presence of slight peritonitis and an extreme degree of œdema of the meso-colon. The bowel was then thoroughly washed out through a long tube passed up the rectum and discharging through the incision in the colon. This had a twofold action: it thoroughly disinfected the gut, and it stimulated peristalsis and contraction in the enormously-distended and almost paralysed colon. The wounds were closed in the ordinary way, and the patient made an uninterrupted recovery, being married seven weeks after the operation!

In the extremely interesting review of the operative treatment of volvulus of the sigmoid which follows, Mr. M'Ardle directs special attention to the following points:—(1) The pre-

sence of peritonitis; (2) The œdema of the meso-colon; and (3) The method of emptying the bowel. Peritonitis, he rightly insists, should be no bar to operative interference. "To say, as some do, that peritonitis contra-indicates laparotomy is, to my mind, the greatest fallacy. How many of our serious cases—uterine, ovarian, or intestinal—are conducted before the onset of peritonitis? Few, indeed, if my experience teaches anything." The œdema of the meso-colon he regards as due to the obstruction of the mesenteric veins and lymphatics, and remarks that "the separation of the layers of the meso-colon by dense exudation material explains the manner of development of those fatty and sometimes semi-gelatinous masses met with in chronic obstructions of the mesenteric veins and lymphatics." As regards emptying the bowel, the author speaks with no uncertain voice as to the advantages of free incision and full evacuation of the contents, and the case points strongly in favour of the line of incision adopted and referred to above. Puncturing and tapping are rightly dismissed as ineffectual and unsurgical.

The points we would like to emphasise in this excellent paper are:—

1. The advantages of the line of incision into the bowel following the line of the longitudinal muscular fibres was shown at the time of operation by the almost complete closure of the intestinal wound by muscular contraction without suture when the paralytic distension was succeeded by peristalsis.

2. The necessity for free opening and thorough evacuation of the contents of the bowel—gas and fæces—before attempting to reduce the volvulus.

3. The advantages of thorough flushing of the lower bowel through the incision in the gut at the time of operation by means of O'Beirne's long tube, some unirritating antiseptic being used, and the prevention thus of the continued contact of decomposing materials with the intestinal wound.

VIII. BLOODLESS AMPUTATION AT THE HIP-JOINT.

In the *Chicago Clinical Review*, February, 1893, Dr. Nicholas Senn describes a new and "bloodless" method of performing this operation. After a short historical sketch of amputation of the hip, the author proceeds to review the development of the technique of bloodless amputation at the hip-joint—tourniquets

of various form, compression of the common iliac by Davy's lever, preliminary ligation of the femoral or external iliac artery, Esmarch's elastic tourniquet, the methods of Myles, Wyeth, and Keyes—and dismissed them all as not fulfilling completely the conditions required to render the procedure bloodless. Why, it may be asked, this necessity for avoiding as far as possible this loss of blood? Dr. Senn replies:—"Statistics show that in the majority of cases hæmorrhage was the cause of the great mortality which attends this operation during the first five days, including at least 70 per cent. of the total mortality. Volkmann has called attention to the profuse parenchymatous oozing which frequently attends this operation, and which has done so much towards adding to its great mortality. . . . The femoral artery is not the only source of dangerous or fatal hæmorrhage. In three cases reported by Luning the profunda femoris artery had a high origin and caused serious hæmorrhage, and in two others the control of hæmorrhage was difficult, and all these patients died during or soon after the operation. Larrey, von Walther, and Jaeger mentioned the obturator, ischiatic, and circumflex arteries as a source of troublesome hæmorrhage. Linhart and Langenbeck lost each a case from bleeding from branches of the hypogastric artery, and Zeis one from hæmorrhage from the obturator and profunda femoris arteries." Accordingly, the case for hæmorrhage being proved, the author formulates the cardinal points in a typical amputation of the hip as follows:—(1) Disarticulation of the head and isolation of the upper part of the femur from the attached soft tissues through an external straight incision; (2) Elastic constriction of the thigh just below the pelvis until the amputation has been completed and the principal vessels have been tied; (3) Formation of the cutaneous flaps and circular sections of deep tissues below the point of constriction.

The external incision is that of Langenbeck for resection of the hip-joint, but is more extensive, being about eight inches in length, and from the top of the trochanter the point of the knife is kept in contact with the bone. The trochanteric muscular attachments are now severed close to the bone with a stout scalpel. The clearing of the digital fossa and the dividing of the external obturator tendon require extreme caution. The thigh is now flexed, strongly adducted, and rotated inwards when the capsular ligament is divided transversely at its upper

and posterior part. The remaining portion of the capsular ligament is severed, while the thigh is brought back to a position of slight flexion. After its division the thigh is rotated outwards, and the ligamentum teres divided, if possible ; if not, the head of the bone is forcibly dislocated on the dorsum ilii, and the trochanter minor and upper part of the shaft of the femur cleared by using alternately the scalpel and the periosteal elevator. The head of the bone may be displaced through the incision, and the shaft cleared completely as low down as the point of section of the soft parts. Further loss of blood is now prevented by elastic constriction applied in the following manner:—The limb is brought down in a straight line with the body, the thigh slightly flexed so as to push the upper free end of the femur forward into and beyond the wound, when a long, stout hæmostatic forceps is inserted into the wound behind the femur and on a level with the trochanter minor when in normal position; the instrument is pushed inwards and downwards in a direction about two inches below the ramus of the ischium, and just behind the adductor muscles. An incision is made through the skin, the tunnel in the soft tissues is enlarged by dilating the blades of the forceps, and a piece of aseptic rubber tubing, three-quarters of an inch in diameter, and about three or four feet in length, is grasped with the forceps in the middle, and is drawn along the tunnel as the forceps is withdrawn. The tube is now cut in two at the point where it was grasped by the forceps, and with one half of the tube the anterior segment of the thigh is constricted sufficiently firmly to completely interrupt both the arterial and venous circulation. The posterior segment of the thigh is constricted by the remaining rubber tube, which is drawn sufficiently tight behind, when the ends of the tube are made to cross each other, and are brought forward and made to include the anterior segment, when they are again firmly drawn and tied, or held by a strong pair of forceps, above the first constrictor. As the anterior segment of the thigh contains the principal blood-vessels, this method of applying the posterior constrictor furnishes an additional security against hæmorrhage from the large vessels when divided by the circular incision. The flaps are now made. In making the anterior flap the incision is commenced at the lower end of the external incision, dividing the tissues down to the muscles, and being carried in a gentle curve across the anterior

aspect of the thigh, embracing about two-thirds of the circumference of the limb, and being finally carried up along the inside of the thigh to terminate just below the skin opening occupied by the elastic bands. The posterior flap is made in the same way, but about one-third shorter. The flaps are now reflected to the point where the muscles are to be divided, and should always include the deep fascia. Division of the muscles in a slightly conical direction at the level of the denudation of the femur, completes the operation. The vessels in the flaps are picked up and tied separately, a second ligature embracing the femoral artery and vein being applied half an inch above the first ligature—a proceeding which will hardly meet with the approval of British surgeons. In concluding Dr. Senn writes:— "The double constrictor presents many advantages in the prevention and treatment of hæmorrhage in this amputation. Slipping of the constrictors is an impossibility, and they control the hæmorrhage absolutely, while their proper use divides the wound into two halves, each of which is separately treated. thus reducing the loss of blood to a minimum. I applied this method to one case recently, and everyone present was favourably impressed with the ease with which the hæmorrhage was controlled during the amputation, and astonished at the small amount of blood lost after the removal of the constrictors." The paper is admirably illustrated, seven reproductions of photographs showing in a more graphic manner than any words the various stages of the method. We have described the method fully and almost in the author's words, believing that any plan which reduces the dangers and simplifies the technique of this formidable procedure will be hailed with joy by all operating surgeons, and will certainly command a trial.

IX. TREATMENT OF ANAL FISTULA.

In the *Revue de Chirurgie*, T. XII., No. 6, 1892, Dr. Llobet publishes a short paper with tables of comparative cases of fistula in ano—one treated by incision and scraping, the other by incision and immediate suture. This method, which was tried by Chassaignac, has given in his hands most excellent results. The patient is prepared in the usual way by a purgative the evening before, and an enema on the morning of operation. Under anæsthesia the anal region is shaved and rendered perfectly aseptic. A bivalve or Sims' speculum is

introduced into the rectum, and the mucous orifice recognised by touch or sight. A grooved sound is then carried through the fistula, piercing the mucous membrane in cases where no internal opening exists, and the whole length of the canal and any diverticula are then completely divided with a long and narrow bistoury. Then with a sharp curette all the fungous or fibrous tissue lining the wall is thoroughly scraped away, and the parts are freely irrigated with a four per cent. solution of boric acid. The wound is then carefully sutured with silver-wire, catgut, or horse hair, two to eight sutures being applied according to circumstances, and embracing all the depth of the tissues so as to obliterate the cavity. A special suture approximates the fibres of the external sphincter, and the skin wound is closed by a couple of horse-hair sutures. The rectum is now thoroughly washed out, plugged with iodoform gauze, and the bowels are confined by means of opium and suitable diet. On the seventh day a saline purgative is administered, followed by an enema, and the following day the stitches are removed.

In the table of 21 cases treated by the older method, the duration of treatment ranged from 28 to 63 days—the average period, in those who remained under treatment till cured, being 44·2 days; while, in the 18 cases treated by immediate suture, the duration ranged from 7 to 40 days, and the average was 15·3 days, showing a decided preponderance in favour of the latter method. It has often been a matter of wonder that this obvious improvement in treatment has not been more largely availed of, but it is to be hoped the statistics given above will induce surgeons to, at length, give it a trial.

X. ENTERECTOMY AND ENTEROPLEXY.

In the *Medical Week*, December 9, 1892, Mr. Mayo Robson describes a method of performing enterectomy and allied operations by means of a decalcified bone bobbin, which, he says, "as it can be rapidly performed, is easy of accomplishment, secure against leakage, and avoids the danger of subsequent contraction of the opening by securing continuity of mucous membrane through the new channel, besides being applicable to pylorectomy, pyloroplasty, gastro-enterectomy, short circuiting of bowel, enterectomy, ileo-colostomy, and cholecystenterostomy, it is thought to present such advantages as to warrant its being made known to others." The tube, which is made of decalcified bone, is shaped like a cotton-

bobbin, whence its name. Only two continuous sutures are used—one called the "marginal" or mucous, and the other, the "external" or serous—for the former fine catgut, and for the latter silk is employed. "For convenience," writes Mr. Robson, "it is best to apply the serous suture around the posterior half first, then to bring the posterior margins together with the mucous suture, after which the tube is placed in situ; the mucous suture being then completed, drawn tight and tied off, and finally the serous suture is continued around the anterior half. When the latter is drawn tight and cut off short, both sutures are completely buried out of sight, mucous membrane is continuous with mucous membrane, serosa with serosa, and the canal is completed through the tube. By the use of the second continuous suture, taking up serous membrane only about $\frac{1}{8}$ or $\frac{1}{4}$ inch from the margin of the opening, the certainty of secure union of serous surfaces is almost guaranteed, as is also the fear of extravasation of visceral contents with almost absolute certainty prevented." The procedure is simplicity itself, and can be grasped in a few seconds from a study of the diagrams with which the paper is illustrated, though it is hard to convey a clear idea of it in words. Mr. Robson reports three cases—two of his own, and one under the care of Mr. Jessop—in which the results were admirable. The first was a case of short-circuiting the bowel for malignant stricture of the ascending colon, subsequent to an enterectomy for the relief of acute obstruction of the bowel; the second, one of cholecystenterostomy for biliary fistula; and the third, enterectomy for cancer of the ascending colon. The growth was completely removed, and the cut ends of the colon directly united by means of two continuous sutures around a decalcified bone bobbin. The second case died of exhaustion at the end of a fortnight, but the autopsy showed "an entire absence of peritonitis, and the ileum and colon were found perfectly united, the opening between the two being satisfactory and patent." The other two cases made uninterrupted recoveries.

Resection of the intestine without suture is, we may take it, only the preliminary to operation without hands, yet such is the ideal procedure put before us independently by two American surgeons. In the *Medical Record*, Dec. 10, 1892, Dr. J. B. Murphy of Chicago details the features of an "anastomosis button," which obviates the necessity of suturing the intestinal coats. "A button consists of two small circular bowls. There is 'sweated' into a circular opening, 12mm. in diameter at the bottom of one

bowl, a cylinder 15mm. in length, with female screw-thread on its entire inner surface. The cylinder extends perpendicularly from the bottom of the bowl. There is an opening in the male bowl in which is 'sweated' a similar and smaller cylinder of a size to easily slip into the female cylinder. There are two brass springs soldered on either side of the inner surface of the lower end of the male cylinder, which extend almost to the top, where small points of them protrude through openings in the cylinder. These points are designed to catch the screw-thread when the male cylinder is pressed into the female cylinder, and thus hold the bowls together at any point desired. To separate them again they are simply unscrewed. A small brass ring, with a thin though not cutting edge, to which is attached a wire spring, is placed in the male bowl and retained in position, projecting one-eighth of an inch above the edge of the bowl. This is held up by the wire spring, and is there for the purpose of keeping up continuous pressure until the entire tissue between the edges of the bowl is cut off. This spring attachment is absolutely necessary only when the stomach is operated ǒn. There are four openings, 5mm. in diameter, in the side of each bowl for the purpose of drainage. By this it will be seen we have two hemispherical bodies held together by invaginating cylinders. These hemispheres of the button are inserted in slits or ends of the viscera to be operated on. A running thread is placed around the slit in the viscus, so that when it is tied it will draw the cut edges within the clasp of the bowl. A similar running thread is applied to the slit in the viscus into which the other half of the button is inserted, and the bowls are then pressed together. The pressure atrophy at the edge of the bowl is produced by the brass ring supported by the wire spring. The opening left after the button has liberated itself is the size of the button. This differs from all previous devices in the following particulars or combinations thereof:—(1) It retains its position automatically; (2) it is entirely independent of sutures; (3) it produces a pressure atrophy and adhesion of surfaces at the line of atrophy; (4) it insures a perfect apposition of surfaces without the danger of displacement; (5) it is applicable to the lateral as well as to the end to end approximation; (6) it produces a linear cicatrix, and thus insures a minimum of contraction; and (7) in the extreme simplicity of its technique, which makes it a specially safe instrument in the hands of the every-day practitioner as well as the more dexterous specialist."

The author relates the results of numerous experiments on animals for the purpose of determining the applicability of the method to cholecystenterostomy, gastro-enterostomy, pylorectomy, end to end and lateral approximation of the bowel, and ileo-colostomy, and in all the results obtained were good. Moreover, the records of three cases of cholecystenterostomy in the human subjects are given, all of them successful. Such a procedure, by diminishing the time of the operation, must enhance the prospects of success—the whole time occupied in Dr. Murphy's last case being twenty-one minutes only.

From under the Southern Cross and from the home of revolutions comes naturally the latest idea in revolutionary surgery, under the name of "Entéroplexie." In a memoir presented to the South American International Congress of Medicine, January, 1893, Dr. Ramaugé, of Buenos Ayres, described a method he had devised of restoring the continuity of the intestine after operation without suturing the walls, believing that simplicity of detail and rapidity of execution are the essential factors in success in intestinal surgery. The divided ends of the gut are brought into apposition by means of a mechanical contrivance called the "Enteroplex." The enteroplex is made of aluminium on account of its lightness, resistance, and non-irritability. It consists of two rings with rounded edges, on the inner face of which are inserted at opposite points of one of the diameters two small projections, extending slightly beyond the level of the margin. On one of these—the female ring—the projection is hollow; while on the other—the male ring—it is provided with teeth which catch in the grooves contained in the hollow one. These teeth acting in the hollow socket serve to fix the two rings in a perfectly immovable position, leaving, however, between the two edges a space in which the walls of the intestine are caught. The intestine is fixed by a few threads of silk or catgut, which are passed through corresponding holes in the edges of the ring, and the two rings being then approximated and fastened by the clasps, the peritoneal surfaces are brought into accurate apposition and held there until firm union has taken place, and the sloughing of the portion of the intestinal walls embraced between the rings sets free the "Enteroplex." The rings are made in three sizes, corresponding to the principal variations in the diameter of the lumen of the various portions of the intestinal tract. The operation has not been so far practised on the human

subject, but the author relates several cases in which it has been performed on animals with satisfactory results. The conclusions at which he arrives are as follows:—

1. Enterorrhaphy is a tedious and difficult operation, attended with an enormous mortality.
2. Enteroplexy is an operation which is rapidly performed, is in the power of every surgeon to accomplish, and leads to rapid cicatrisation.
3. The cicatrix is linear, and of the smallest possible dimensions, so that no narrowing of the intestinal canal is likely to ensue.
4. The enteroplex is easily eliminated, its weight, shape, and size being without danger.
5. Enteroplexy is adapted to many surgical conditions—to gangrene of the intestine requiring resection, to limited wounds of the intestinal wall, or to intestinal anastomosis.
6. Experiments on animals afford remarkable results.
7. Enteroplexy fulfils all the requirements of gastro-intestinal surgery.

Without going so far as this final statement of the author, it must be admitted that these two independent but almost identical procedures open up a new and entirely unexpected field in abdominal surgery, and one that must command the attention of all surgeons interested in this branch of surgical science.

BRITISH MEDICAL SERVICE.

The following is the official list of surgeons on probation of the medical staff of the British Army who were successful at both the London and Netley Examinations. The prizes are awarded for marks gained in the special subjects taught at the Army Medical School. The final positions of these gentlemen are determined by the marks gained in London added to those gained at Netley, and the combined numbers are accordingly shown in the list which follows:—August, 1893—1. [a] Spencer, C. G., 5,523; 2. [b] Fowler, C. E. P., 5,009; 3. Goodwin, T. H. J. C., 4,985; 4. Porter, H. E. B., 4,785; 5. Keble, A. E. C., 4,551; 6. Lattey, A., 4,489; 7. Collins, D. J., 4,440; 8. Killery, St. J. B., 4,402; 9. French, H. C., 4,307; 10. Smith, W. W., 4,205; 11. Barter, W. P., 4,105; 12. Williams, E. M., 3,916; 13. M'Munn, J. R., 3,723; 14. Anderson, J. B., 3,642.

[a] Gained the Herbert Prize, Montefiore Medal and Prize of 20 guineas, and the Parkes' Memorial Bronze Medal.

[b] Gained the "De Chaumont Prize."

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

Waterborne Cholera.[a] By ERNEST HART, M.D., Editor of the British Medical Journal; Chairman of the National Health Society.

(*Continued from page 150.*)

ERRATA.

[In the first part of this article the following misprint occurred :—Page 138, line 9 from top, for "prevalation" read "prevention."]

(B) EGYPTIAN EXPERIENCES.

In 1831, 31,000 deaths from cholera are said to have occurred in Cairo, and Dr. Graves[b] mentions 150,000 as the estimate of the total mortality from that disease in the whole of Egypt in that year. Since then Egypt has been severely scourged by cholera at short intervals, but for our present purpose no reliable data are available earlier than the visitation of 1883. In that year the first cases of cholera occurred at the port of Damietta during June. The disease became prevalent there on the 22nd of that month, and before the end of the month had killed some 700 of its 30,000 inhabitants. Gradually declining in Damietta as July advanced, it invaded various towns of the Nile delta, and reached Ghizeh and Cairo by July 16. After July the disease lost its epidemic intensity, and appeared to be extinct by the end of September. According to Dr. Sandwith,[c] the physician to Kasr-el-Aini Hospital, Cairo, who has been able to collect much valuable information concerning the epidemic, 58,511 deaths from cholera occurred throughout Egypt among a population of 6,765,000. In Cairo, among a population of 371,576, there occurred 6,650 deaths; in Ghizeh, with a population of 283,083, there were 3,996 deaths; and in Damietta there were 1,927 deaths. The definite origin of the epidemic has been much disputed, though there has always seemed

[a] An Address delivered before the Forty-fourth Annual Meeting of the American Medical Association, held at Milwaukee, Wis., June 7, 1893.

[b] Dr. Graves's Clinical Lectures, 1848. Vol. I., p. 307.

[c] Paper on Cholera in Egypt, read before the Seventh International Congress of Hygiene and Demography, held in London, August, 1891.

to me to have been ample opportunity for the introduction of the specific infection into Damietta. Once started, however, the condition of Egypt was exactly such as would favour the extension of the disease.

"There can be no doubt," says Dr. Sandwith, "that Damietta in 1883 possessed all the known requisites for engendering filth disease. In addition to the predisposing causes common to the rest of Egypt, a flat alluvial soil, soaked with decomposing organic poisons, drinking water soiled by every imaginable means, heated stagnant air, an apathetic population and a poverty-stricken indifferent Government, Damietta had unfortunately at least five other dangers, which affected chiefly the natives of the most crowded and insanitary part of the town. The richer inhabitants drew their water supply from cisterns filled from the Nile at its height, but the poorer folk, living in the quarter of the town where cholera was first seen and was most rife, were entirely dependent for drinking water upon a low Nile for several weeks below sea level, and therefore extremely brackish, or upon an open canal drain which ran through the town and received the sewage of houses on its banks, and also of the public latrines attached to many of the sixty mosques in the town. These conditions prevailed every May and June, but in 1883 must be added the wholesale contamination of the Nile by the carcases of cattle which had died of bovine typhus. One Englishman says that he removed during two months more than 2,000 carcases in every stage of putrefaction, the greater number being from the Damietta branch of the Nile. The air of the town was in a very poisonous state, and was not improved by the depots of stinking salted fish (*fisikh*) arriving from the neighbouring lake of Menzaleh for the consumption of Damietta and the rest of Egypt. The last of the exciting causes special to Damietta, was the fair which immediately preceded the cholera explosion (June 13 to 20). Some 15,000 people had been allowed without any sanitary supervision to encamp on the outskirts of the town, and to overcrowd the existing 30,000 inhabitants. The wonder is, not that cholera appeared, but that any remained alive to debate its origin."

Speaking in 1884 of the water supply, Sir W. G Hunter, who was one of the Special Commissioners sent out by the English Government to inquire into and report upon the epidemic of 1883 in Egypt, remarked [a] that the larger majority of the people drink the Nile water unfiltered, and generally before it has been allowed time to deposit. "It is said that they prefer it in this condition. In Cairo the quality of the water supply is indifferent. At the waterworks there is but one settling tank, and, as it is in constant use it can never be cleaned. The large amount of mineral matter contained in Nile water while settling carries down with it no inconsiderable quantity of the organic substances held in suspension

[a] British Medical Journal, January 19, 1884, p. 91.

in the water, and must lead to rapid fouling of the tank. Filtration is effected by gravel and sand. In the Ismailia quarter—that is, the fashionable part of the city—and in the Boulaq quarter also, no attempt is made to filter the water, but it is supplied as obtained from the Nile.

Close to the intakes of the Cairo waterworks, where some slight effort it is presumed would be made to prevent pollution of the water, I have seen human and other animal excreta, fresh and stale, lying about in various directions, and men and women bathing and washing their soiled clothes in the river. This was by no means an uncommon sight. The water supplied to Alexandria is, on the contrary, of very good quality. The system, though much the same as in use in Cairo, is carried out in a much more efficient and thorough manner. Alexandria is the only town in Egypt which possesses a wholesome supply of water. The river and the soil have been polluted through countless generations, and the alluvium is almost as absorbent as a sponge. Wherever there is water, it is scarcely too much to say you may feel assured it has been fouled by man. The river is, I may say, polluted and fouled almost from its source. It is the means by which filth, garbage, and dead animals of every description are disposed of. Every town and every village situated on its banks add their quota to the fouling of the stream until at length, when it has reached its lowest level in June, it is found, as at Cairo and at Damietta, to be undergoing putrefactive changes; to present under the microscope the character of pond water rather than as a running stream, and to contain bacterioid organisms in considerable quantities." As a specimen of a quality of the water used by the villagers in Egypt, Sir W. G. Hunter quoted the following passage from a letter written on August 30, 1883, by Mr. Honman, one of the twelve medical gentlemen sent to Egypt by Her Majesty's Government for service during the epidemic, respecting Mehallet-el-Kibir—a town of 28,000 inhabitants midway between the Rosetta and Damietta branches of the Nile:—"The town has three mosques, the drain from one running through the town, quite open, and with three feet of filth at the bottom. This discharges itself into a pool of water at the back of the town, which is used by the people for domestic purposes, and as drinking water for their cattle. The other two mosques drain in a like manner into pools outside the town, and they also are used by cattle and for domestic purposes. The stench from these drains can be smelled all over the town."

In 1883 Alexandria was the only town in Egypt possessing a tolerably wholesome supply of water. That supply, however, was by no means altogether safe, and it was laid on to only some 4,000 out of the 16,000 houses in the town. Alexandria also possesses a system of underground sewers, but many of these structures were found to be in a neglected ondition in 1883. Yet this town suffered much less severely than the

the rest of Egypt, only 916 cholera deaths occurring among its 225,000 inhabitants.

During the last ten years a great stimulus has been given to sanitary reform throughout Egypt, but the task is exceptionally difficult and the obstacles are many. Speaking of a visit to Damietta in 1891, Dr. Sandwith remarks that "the existing cisterns are cleaned out and refilled every year, and a large new one built by the Government supplies the town for two months and a half. Moreover, a new circular fresh water canal has been excavated to bring Nile water from near Cairo, and the central canal drain of the town has been filled in and converted into a road. The river and the canal no longer contain dead bodies, and the local fair has been shorn to harmless dimensions."

It is unfortunate that the question of providing Cairo with a proper system of drainage is still in abeyance, the initial costliness of an efficient scheme being apparently the real cause of the delay. But there is a prospect of something being done in this matter ere long. The responsible authorities of Cairo, however, will be well advised if they put the sanitary condition of the town into a proper state without further delay, and take care to adopt the most efficient and permanent scheme for that purpose, even if it be at first a little more costly, rather than lay the foundations of future trouble by carrying out an imperfect or temporary scheme.

The water supply of the country is also still far from satisfactory, although the question how best to deal with so difficult a problem has for some time been receiving attention. The latest report of Lord Cromer, the British Consul-General for Egypt, on the administration of that country, and the progress of reform in it, is very hopeful. Dr. Rogers Pasha, who is quoted by Lord Cromer, is able to say that an extraordinary and satisfactory change has come over the spirit of the mudirs and governors. "Two mudirs," he says, "have forwarded me schemes of important sanitary legislation, while all the mudirs and governors it has been my pleasure to meet are unanimous in recognising the evils which exist, and the necessity for their being remedied."

(c) FRENCH EXPERIENCES.

In 1883 some cases of cholera occurred in Marseilles, but by a conspiracy of silence between the municipal authorities, the attendant physicians and the nurses, their existence was for the moment concealed. In June, 1884, however the disease broke out in Toulon, and a few days later cases were reported in Marseilles. On this occasion it was not practicable to secure the same secrecy as had been obtained in the previous year. The disease claimed some 30 or 40 victims daily in Toulon during the second and third weeks of July, and before it had entirely disappeared from the town, in the middle of November, it had caused

over a thousand deaths there. At the same time it steadily spread in Marseilles, and during the second week of July, the daily mortality there rose to 70 or 80. Between June 27, when the first case appeared, and October 27, when the disease finally disappeared from that town, 1,777 deaths were recorded. Marseilles again suffered in 1885, 1,039 of its inhabitants dying of cholera during the year. Toulon also lost 314 inhabitants from the disease that year. Coming to more recent times, we find that between the middle of September and the middle of November, 1892, some 90 deaths from cholera occurred in Marseilles; and another outbreak of the disease, which the local authorities again strenuously endeavoured to conceal, occurred in February, 1893, and caused nearly 100 deaths.

The sanitary condition of both Toulon and Marseilles at the time of the epidemic of 1884 and 1885 was scandalous. Reporting to the Comité Consultatif d'Hygiène Publique de France, on July 1, 1884, after an inspection of Toulon in company with Dr. Proust, Dr. Brouardel described[a] Toulon as "one of those towns where the laws of health are most imperfectly observed." He pointed out that the water, though originally derived from springs of good quality, was not free from suspicion of contamination before it reached the consumers, and he described at some length the unwholesome methods of filth disposal in vogue in the old quarters of the town, such as the general practice of casting the night soil each morning into the gutters, where, if, as was generally the case, the water was not abundant and the gradient sufficient, it pestilentially accumulated. A very similar state of affairs is disclosed by M. A. Dominique in his "Historical Study of the Cholera Epidemics at Toulon."[b]

The insanitary state of Marseilles is also notorious. In a report on the epidemic of cholera in that town in 1884, M. Guérard, the engineer of the port, pointed out that the most neglected portions of the town as regards cleanliness were those that were most fatally affected, and he especially referred to the old quarters to the north of Port Vieux and behind the Rue Cannebière. Referring to the state of Marseilles forty years ago, when in the absence of sewers the Port Vieux became a receptacle for all the liquid impurities of the town, when local wells were in general use for the water supply, and when closets were but little known, all the filth finding its way into the gutters, M. Guérard added that, with the exception of an abundant water service, the same description still held good for the old quarters.

But even at that time the water supply, though abundant, was, and is at the present day, far from satisfactory. Marseilles derives its water from four sources—the river Durance to the extent of 7,000 litres per

[a] Recueil des Travaux du Comité Consultatif d'Hygiène Publique de France. Tome IV. (1884), p. 203.

[b] Le Choléra à Toulon. Par A. Dominique. Toulon. 1885.

second, the river Huveaune to the extent of 100 litres per second, the spring of La Rose, 5 litres per second, and the Grand Puits, which supply six public fountains. The water of the Durance is brought to Marseilles by a canal and aqueduct some eighty miles in length, and as it approaches Marseilles it is exposed to a variety of contaminations. At one point it passes through some flour and other mills, turning the water wheels in its course, and having corn washed in it. At another point it passes in open conduit through a populous locality. Moreover, at its best the Durance is but a turbid river. It carries down a good deal of vegetable matter in its course, and, although its waters pass through the settling tanks on its way to Marseilles, it is not filtered before its actual distribution. Some elaborate analyses of the Durance water have recently been made by Dr. P. David, of the 15th Army Corps, and show that in its unfiltered state it is by no means an altogether satisfactory water.

It is, however, the use of the water of Huveaune which is most dangerous. That water is drawn from the river near the village of St. Marcel, and a few kilometres only below the village of La Fenne and the town of Aubagne, the inhabitants of which cast all their slops and filth into the river. In an interesting report on the cholera epidemics of 1884 and 1885, M. Guérard [a] states that nothing in the observation of these epidemics "proves that the waters distributed in the town had any appreciable influence on the mortality from cholera." But, at the same time, he points out that at La Penne and Aubagne there had been numerous cases of cholera in 1885, and adds that "the use of waters from the Huveaune for domestic wants in the town of Marseilles could not have been without influence in the development of the epidemic in that town." Moreover, he shows that "the water of the Huveaune was drunk in precisely those quarters of the town in which the epidemics of 1884 and 1885 made the greatest number of victims."

As further showing the suspicion which very properly attached to the water supply of Marseilles at the time of the epidemic of 1884, the following circumstances recorded by Dr. Proust [b] in his report of December, 1884, on the cholera epidemic of that year in France, are instructive:—

A French steamer (Ville de Palerme) left Pointe-a-Pitre on June 24, 1884, and arrived at Marseilles on July 17. It remained there from July 17 to the 24th—that is to say, during the worst days of the cholera epidemic. During its stay at Marseilles there had been no sickness on board; it was not until two days after the departure of the vessel from that port for Havre that the earliest cases of illness on board took place.

[a] Recueil des Travaux du Comité Consultatif d'Hygiène de France. Tome XVI. (1886), p. 267.

[b] Recueil des Travaux du Comité Consultatif d'Hygiène Publique de France. Tome XIV. (1884), pp. 232, 233.

Between July 26 and 29 five men on board were seized with cholera. The captain narrates that before arriving at Marseilles the steamer had taken on board a supply of water at Gibraltar on July 12, and, acting on the advice given him, there was consumed on board only the water taken at Gibraltar during the whole of the stay of his vessel at Marseilles. But on July 24—the day of the departure of the vessel from Marseilles—the Gibraltar water being almost exhausted, he had to refill his water-tanks with the Marseilles water, and that was the water consumed on board after the evening of July 24. The captain himself remarked the coincidence of the appearance of cases of sickness on board with the first use of the Marseilles water, and also that these occurrences seemed to cease at the same time that he ceased to use that water. He gave his crew the water boiled and lightly alcoholic, and after that no new case of illness occurred.

As regards the outbreak in Marseilles in October, 1892, Dr. Brouardel has declared that it was principally due to contamination of the drinking water by sewage.

Happily, both for Marseilles and for the rest of France, as well as for the safety of the health of vessels trading with Marseilles, great works are about to be commenced for the general sanitary improvement of the town. Marseilles has obtained an unenviable notoriety as a focus of cholera, and the efforts at concealment which have always been made have not tended to strengthen public confidence in the good faith of the local authorities.

In the same report from which we have taken the particulars respecting the steamship Ville de Palerme, Dr. Proust deals with the spread of cholera throughout the southern and south-western departments of France in 1884, and, after detailing the facts respecting a great number of localities where the disease prevailed, he arrives at the following general conclusions:—"1. The cholera has been imported into the towns and villages of the departments just mentioned. 2. Water has played an important part in its transmission. 3. The intensity of the epidemic has been in direct proportion to the unhealthy condition of the country. 4. The cessation of the epidemic in the localities invaded can in part be attributed to the adoption of sanitary measures and of means of disinfecting."

One of the epidemics included in Dr. Proust's interesting report is that which occurred at Yport, a little town of 1,700 inhabitants in the department of Seine-Inférieure. The facts are also given in a report [a] by that earnest sanitarian, Dr. Gilbert of Havre. It would appear that the department of the Seine-Inférieure had been already free from cholera until the disease was imported by the arrival there, on September 28, of two of the crew of the Louise-Marie from the port of Cette. This vessel

[a] Le Choléra à Yport. Par M. le Doctr. Gilbert. Revue Scientifique du ~~vembre, 1884.

having arrived at Cette from Newfoundland, nine of the crew shortly contracted cholera, two of the attacks terminating fatally. After this several of the crew traversed France by rail, one dying of cholera on the journey. The personal effects of the remainder were at the same time submitted to some process of disinfection by a sister of mercy. One of the men who left for Yport had suffered from a cholera attack at Cette, and on the day following his arrival (September 29) his clothes were, with the aid of his sister-in-law, wrung out in water and hung up in front of certain dwelling houses. On October 4 this sister-in-law was suffering from diarrhœa, and on her return that day from having completed the washing of these clothes at the public "fontaine" she was seized with symptoms typical of the Asiatic disease and died. Cholera subsequently extended to the filthy narrow streets and bypaths, in which low dwellings, excavated in the sloping surface and having a natural soil for a flooring, supplied the place of houses. In all there were forty-two attacks and eighteen deaths at Yport, the last case taking place about the middle of November.

A very detailed account of the cholera epidemic of 1884 in France has been written by Dr. L. H. Thoinot of Paris, and a concise abstract of it is to be found in Dr. Shakespeare's report on cholera in Europe and India.[a] Dr. Thoinot's investigations go to prove very clearly that cholera follows water-courses, and especially those of little importance, such as torrents and small streams; that water is a means of propagating cholera for both short and long distances; that the cholera manifestly develops around wells or fountains, the water of which has been contaminated by the choleraic germs; that if there exist two kinds of drinking water in a neighbourhood, one infected and the other free of all infection, the cholera will attack the neighbourhood of the first, but will spare absolutely, or notably at least, the neighbourhood of the second; and that cholera is transmitted by linen and clothing contaminated by choleraic dejections. Each of these propositions is fully borne out by the details of the epidemic of 1884. Reviewing these epidemics Dr. Shakespeare remarks that "the disease seems to have spread from place to place by means of soiled personal effects, by small watercourses which had become contaminated with choleraic discharges, or the washing therein of soiled linen, and by the movements of persons experiencing an active or a latent attack of cholera. By these means the disease reached and found a lodgment in many places in the interior of France, remote from the districts at first affected."

The department of Finistère furnishes, unfortunately, a very vivid lesson in the spread of cholera by dirt and polluted water. In that north-western corner of France the population are poor, very ignorant,

[a] Report on Cholera in Europe and India. By Edward O. Shakespeare, of Philadelphia. Washington, 1890.

and often greatly addicted to intemperance; the soil is filth-sodden and permeable, the water supplies are almost entirely derived from surface wells, imperfectly protected and readily liable to receive specific contamination, and the arrangements for filth disposal are of the most primitive and old-world character. Here, then, are to be found all the accessories needed for a widespread cholera epidemic, and here cholera has ravaged the simple folk in 1832-33, 1834-35, 1849-50, 1854-55, 1865-66 and 1885-86. Whenever cholera has visited France, Finistère or its neighbour, Morbihan has been an early and great sufferer. An exceptionably interesting report of these epidemics, dealing in great detail with that of 1885-86, has recently been written by Monsieur Henri Monod,[a] who is now Directeur de l'Assistance et de l'Hygiène Publiques, but was formerly the Prefect of Finistère. This is how he refers to the water supply of the department:—"With rare exceptions the water drunk in Finistère is that of wells; but nearly everywhere the soil is composed on the surface of very permeable calcareous sand. The drinking waters are, therefore exposed to infiltrations, to whatever flows or rests on the soil becoming impregnated with decomposing matters along the roads and at the corners of the houses. Sometimes even streams after they have passed through all sorts of filth flow directly into the wells, which are destitute of kerbs. The inhabitants know it, they see it. Treating it with indifference, they do not use the less of it, but drink philosophically a water which will make them ill only if destiny has thus ordained. Consequently, water seems to have contributed to the propagation of cholera on the one hand in disseminating germs of cholera by the streams, by the washing fountains (*les fontaines lavoirs*) by the watercourses of every description, and on the other hand, in introducing those germs into the human organism by the drinking waters. The communes which can be cited as having had the wells particularly infected are those of Douarnenez, Plouhinec, l'Ile de Sein, Guengat, Guilvinec and Quimper. Those who think that water fills, in the course of a single epidemic of cholera, the double *rôle* of carrier of morbid germs and a direct agent of their introduction, will undoubtedly derive an argument from the precise occurrences in these last two communes."

This outbreak in Finistère was also investigated officially by Dr. Proust,[b] and his opinion is exactly similar to that of M. Monod as to the very conspicuous part played by water in the dissemination of the infection. As regards Guilvinec, where, between October 1 and December 24, 1885, 71 fatal and 54 non-fatal cases of cholera occurred among a

[a] Le Choléra; Histoire d'une Epidémie. Finistère, 1885–6. Annexe aux Tomes XIX. and XX. de Recueil des Travaux du Comité Consultatif d'Hygiène Publique de France. Melun, 1892.

[b] Recueil des Traveaux du Comité Consultatif d'Hygiène Publique de France. Tome XVI. (1866), pages 68 et seq.

population of 1,968, Dr. Proust states that "almost all the villagers use, for drinking, water furnished by a tank called a fountain situated in the centre of the Quartier du Palus, a reservoir which is only a well, and by other wells at different points. This water is the infiltration through the superficial strata. The turf and the sand form a layer of not more than one metre above the impermeable granite. Hence, this water is contaminated by all kinds of organic matters, fæcal and otherwise, which cover the soil in profusion, and at the time of the epidemic by choleraic matters which it has never been customary to throw on the beach, and which, even when disinfected, were buried near the dwellings at a depth of fifty to sixty centimetres. It is to be remarked that in two or three houses where rain water is used no case of cholera was observed. But what is still more worthy of interest is the fact that near Guilvinec, small villages built on the rock have been free from the epidemic. In one of these villages there were two imported cases, but the disease did not spread. A still more striking example is that furnished by the occurrences at Léchiagat, a village which is separated from Guilvinec by a narrow arm of the sea, uncovered at low tide. In 1886 that village had no cholera, although Guilvinec was affected; and, although during that year it served as a refuge for a number of the inhabitants of Guilvinec, the disease did not spread in it. But the inhabitants of that village drink water from an irreproachable source, which they found at a distance of two kilometres. Sometimes they drink rain water, but never well water. This little village has always been free from epidemics, whilst smallpox, typhoid fever, and cholera have prevailed on different occasions at Guilvinec."

But by far the most important extension of cholera in France in 1884 was that which affected the western suburbs of Paris, and subsequently that city itself in November. A few deaths had taken place in Paris between July and October, but the first case of the more important outbreak did not occur until November 3. During the following days of that month the deaths respectively were 1, 3, 18, 14, 28, 76, 95, 96, 79, 83, 65, 70, 45, 36, 47, 28, 34, 25, 15, 19, 10, 14, 8, 3, 11, followed by a rapid daily decline.[a] Between November 3 and December 5, 946 deaths had occurred in Paris. These figures are very suggestive, even by themselves, of a sudden and temporary agency being at work, such as the contamination of the water supply, and, although the outbreak does not seem to have been officially reported upon in detail, I have excellent reasons for believing that it was due to the temporary distribution of a highly polluted water to particular districts of the city.

In 1892, Paris, more especially again in its western and north-western suburbs, was once more somewhat severely visited by cholera. On April 4

[a] Recueil des Travaux du Comité Consultatif, d'Hygiène Publique du France. Tome XIV. Paris, 1884.

the disease broke out in a crowded prison at Nanterre, to the west of Paris, and ere long it had caused in that institution 49 deaths out of 51 attacks. The disease soon spread through the neighbouring districts of Suresnes, Puteaux, Neuilly and Argenteuil. In May there were ten deaths, in June, 19, in July 78, in August 211, in September 535, in October 102, in November 6, and in December 16, making in all a total of 977 deaths during the year. The greater part of this mortality occurred, as already mentioned, in the suburban districts to the west and north-west of Paris, it being, in fact, late in the autumn before any considerable number of deaths took place within the city fortifications. There is a very general concensus of opinion that the consumption of Seine water was at the root of this serious outbreak, as it had been at the root of previous epidemics. A considerable portion of the Parisian water has been drawn from the Seine near Charenton, but before the intake at that place is reached the river has received at Choisy-le-Roi, Vitry, and a host of other places, the contents of numerous sewers, &c. Drinking such water is bad enough, but when it is considered that the suburban districts in the west and north-west—those districts in fact, where cholera raged last year, and where, also, it began in the epidemic of 1884—draw their water from the Seine, after it has passed through Paris and been fouled by steamer traffic, by the filth from the clothes and linen washed in its floating wash-houses, by the innumerable private sewers at Sèvres, Neuilly, and elsewhere, and by the discharge into it of the contents of the main sewers of Paris at Asnières and St. Denis, one need not wonder at the spread of cholera once introduced. Happily, the works which have been in progress for improving the water supply of Paris by the addition of pure water from the Vigne are to be completed in the spring of the present year (1893), and the suburbs are to have their supply of Seine water drawn where that river is not tainted by Paris sewage, and are also to have it filtered through sand and iron before use. The need for some drastic measures of this kind has long been apparent.

(*To be continued.*)

THE ELEVENTH INTERNATIONAL MEDICAL CONGRESS.

In consequence of the insanitary condition of several of the European states, which prevents their medical men leaving home, and, following the advice of many of the most prominent scientists, both Italian and foreign, the Executive Committee of the above Congress has decided, by a large majority, to postpone the meeting till April, 1894. The exact date of the meeting will soon be fixed.

THE PREVALENCE OF TYPHOID FEVER IN DUBLIN.

The following Report was laid before the Corporation of the City of Dublin, on Monday, August 14, 1893:—

In the autumn of the year 1891, the increase of typhoid fever in Dublin was the subject of much comment in the public press.

In January, 1892, there appeared in the *Health Record* a paper by Dr. W. R. Graves, calling attention to some of the causes of the recent increase of typhoid fever in Dublin, and to the necessity for further investigation of the subject. This paper was published in full on January 5th in the *Daily Express*, and evoked many interesting letters on the subject. In consultation with Dr. Graves, Mr. Maunsell, proprietor of the *Daily Express*, suggested a Commission of Inquiry; and with this object Dr. Graves and Mr. Maunsell summoned a meeting of some leading citizens and medical men at the Shelbourne Hotel on January 21st. This meeting, which was an influential and representative one, was presided over by the Lord Mayor, the Right Hon. Joseph M. Meade, LL.D. Acting on a suggestion of Mr. Frederic W. Pim, then President of the Dublin Sanitary Association, it was agreed to meet the Executive Committee of that Association, at their rooms, 42 Dame-street, on that day week. This general meeting, at which the Lord Mayor again presided, selected Dr. C. J. Nixon, Professor Emerson Reynolds, F.R.S., Mr. James P. Maunsell, Mr. Thomas Drew, and Dr. Wm. R. Graves, to act, together with four members of the Council of the Dublin Sanitary Association—viz., Dr. J. W. Moore, Dr. Stewart Woodhouse, Mr. R. O'B. Furlong, and Mr. Frederic W. Pim, as a Committee of Inquiry. This Committee subsequently co-opted as members Mr. Edgar Flinn, Dr. George F. Duffey, Professor M'Weeney, and Mr. Jonathan Pim.

At the first general meeting it was decided to hold the inquiry under the auspices, and in the rooms, of the Dublin Sanitary Association; and at the next meeting (on January 28th), the Lord Mayor requested that the report should be laid before the Public Health Committee of the Corporation.

The Committee beg to submit the following Report, which was adopted by the Committee, at a meeting held at the offices of the Dublin Sanitary Association, 42 Dame-street, on the 10th November, 1892, Mr. R. O'B. Furlong in the chair. Subsequent action upon the Report was unavoidably deferred by the prolonged and serious illness of the Hon Secretary. The prevalence of Typhoid Fever in Dublin, in the interval between the above and the present date, does not come under the

purview of this Report, but is referred to in a Supplement dated June 29th, 1893:—

1.—PREVALENCE OF TYPHOID OR ENTERIC FEVER IN DUBLIN DURING 1891.

We learn on the authority of the Registrar-General for Ireland that the deaths attributed to enteric fever in Dublin during 1891 amounted to 191, including 16 deaths of persons admitted to hospitals from localities outside the Dublin registration district, and, in addition, 48 deaths from the same disease which occurred in the suburbs included in the registration district. This number is 41 in excess of the average for the ten years, 1881–90, and gives an annual death-rate from the disease of 5·5 per 10,000 of the Dublin population; this rate is higher than that of any other of 33 large towns in the United Kingdom, except Belfast, where the rate was 5·9. The death-rate from enteric fever in London during the same period was only 1·3 per 10,000 of the population.

We learn from the same authority that the proportion of deaths to cases of the disease in hospitals was 9·4 per cent. during 1891. Assuming the mortality to be the same throughout the district, 191 deaths represent 2,022 cases of the disease, of which 1,345 presumably belong to the city proper. Only 434 of these 1,345 presumptive cases were notified in accordance with the requirements of the "Infectious Disease Notification Act" of 1889; or less than one-third of the total number of cases. (See Report by Drs. J. W. Moore and Duffey in the Appendix).

We have exnmined the evidence obtainable on the subject of the distribution of the disease, and are of opinion that the cases noted in the wealthier as well as in the poorer districts, on clay soil and on gravel, are too numerous over the greater part of the city to justify any broad generalisation, save that the lower lying portions are, in the main, those chiefly affected.

It has been pointed out that cases of typhoid fever seldom occurred in Dublin prior to the introduction of Vartry water into the city in 1868, and that within some two years after that date the same fever became increasingly prevalent in Dublin, but without necessarily implying any contamination of the abundant Vartry water supply. These facts were in evidence before the Royal Commissioners on the Sanitary State of Dublin which sat in 1879–80, and an explanation based upon the facts is contained in a Memorandum which we append, and to which we shall refer in another section of this report. (See Report of Commissioners, 1879–80, page 163, for Memorandum by Prof. Emerson Reynolds).

2.—NATURE OF THE INFECTIVE MATERIAL.

There is now no doubt that typhoid fever is caused by micro-organisms which usually enter the human body along with food or air, and multiply rapidly. These bacilli, or rod-like structures, invade the living tissues

of the persons attacked and make their way to the chief organs, the functions of which they interfere with, either directly or indirectly, by means of poisons generated during growth, causing the fever and characteristic intestinal and other symptoms of the disease in question. The excreta of typhoid patients always contain the bacilli, but these expelled organisms do not seem to be capable of reproducing the disease until they have lived for some time outside the human body, under conditions favourable to the development of their original virulence.

This noxious change seems to be most easily brought about in *much diluted* sewage, and it has been observed that the active bacilli swarm wherever such filthy water stagnates. On the other hand, these microbes do not flourish in solid heaps of excreta, but are speedily reduced in vitality, and are ultimately killed. The water-carriage system of sewerage, therefore, facilitates the development of the infective germs. It has been lately stated that in diluted sewage, rich in germs, exposed in a thin layer to sunlight for two hours, or to diffused daylight for five hours, all those germs were killed. (See Report by Professor M'Weeney).

It is evident, then, that sewage containing infective bacilli can propagate typhoid fever by direct contamination of water used for drinking purposes, or by sewer-air and emanations carrying germs to water stored in cisterns, or to liquid or solid foods. We have therefore inquired into these and related questions as affecting Dublin, under the head of—

3.—POSSIBLE MODES OF CONVEYING INFECTION.

(*a.*) WATER.—A member of this Committee has made a series of almost daily analyses of the Vartry water, as supplied from the street main at Lincoln-place, to the chemical laboratories of Trinity College, during January and February of the present year. The general results obtained prove that the water is often, and for a considerable time, of exceptionally high purity. This usual state of purity is obviously inconsistent with any constant contamination at the source of the supply. On the other hand, rapid but temporary reduction of organic purity was detected on two occasions by daily analyses. These changes were not connected with the presence of an excess of peaty matter in solution, and were probably due to the faulty action of street valves, or to similar preventable causes operating even within the area of distribution. The filtration of the water was not always satisfactory, which may be accounted for in part by the absence of suitable filtering beds on the city side of the Stillorgan reservoir. But while the water supply from the street mains proved to be very good on nearly all the occasions on which it was examined, numerous cases have been brought to our notice of contamination, after delivery, by storage in foul cisterns, which were either exposed to the atmosphere of waterclosets, or, being placed in areas, were liable to pollution by sewer-gas or by direct drainage from the higher

street level. (See Report by Dr. C. J. Nixon and Professor Emerson Reynolds in the Appendix).

(*b*.) Milk.—Several epidemics of typhoid have been distinctly traced to the use of milk from dairies in which the fluid was exposed to sources of infection; hence, some of the Dublin dairy yards were visited in order to ascertain whether they were maintained in a satisfactory condition. It appears that some of the best kept yards are situated near possible sources of contamination, such as the Hardwicke and Cork-street Fever Hospitals and the Corporation depot in Marrowbone-lane. But the greater number of the yards visited were reported to be in a very filthy condition, rendering personal cleanliness of the attendants impossible, and the use of clean vessels for the reception and storage of the milk highly improbable. It is evident that milk collected and stored under such filthy conditions as have been described to us may at any time become infected and prove a ready means of conveying typhoid and other diseases through considerable sections of the community. The Corporation rules for the management of such yards appear to be adequate for securing their maintenance in proper condition, but the official inspection must be of a most superficial and imperfect character, else the state of the yards reported to us could not exist. (See Report by Mr. Jonathan Pim).

(*c*.) Sewer-Gas.—Many cases are on record in which typhoid fever has made its appearance in institutions which were apparently in excellent sanitary condition and isolated from ordinary intercourse, but in proximity to houses where the disease existed. In such cases there is a presumption that the contagion was air-borne. (See Report by Drs. Stewart Woodhouse and Edgar Flinn). But such cases are always open to more or less suspicion of other, but undiscovered, modes of infection. There is, however, abundant evidence that the foul gases arising from sewers and sewage-soaked soil can carry with them the infective material of typhoid.

From the evidence collected for the Committee, it appears that, while ventilation of water-closet and bath waste pipes is now very general, disconnecting traps intended to prevent direct communication between the house and main drain are comparatively rare, and the scullery sinks are either untrapped or fitted with the ineffective bell or D traps; consequently sewer-gas can obtain direct entrance to such houses and convey infective bacilli to articles of food in the kitchen and larder, while the water-closets may be provided with elaborate ventilating appliances. (See Report by Mr. Drew and Dr. Graves).

Moreover, in houses unprovided with cement-covered basements, the sewer-gas and emanations from badly constructed house drains and saturated soil can rise through the ground into the atmosphere of the house.

(*d*) Infected Clothing and (*e*) Excreta of Typhoid Patients are also modes of conveying infective microbes to which we may here merely

refer without dwelling upon them. (See Reports by Drs. Stewart Woodhouse and Edgar Flinn).

4.—HOUSE DRAINS AND GENERAL SEWERAGE.

According to the Report of the Royal Commission on the Sanitary Condition of Dublin, 1879–80, the drainage of all classes of houses was then "extremely defective." It is now reported to us that "a vast number of the house drains are still in the condition described in 1879, and are saturating the basement subsoil with sewage."

In numerous instances new pipe drains have been provided during the last twelve years, but too often no real security has been gained by reason of careless laying and connection with the main sewer, absence of disconnecting traps, and ineffective arrangement of scullery sinks, so that only "a small proportion would bear testing in a thorough manner."

We have further ascertained that the drains of houses in which typhoid fever occurred during the recent epidemic in Dublin have in most cases proved faulty when properly tested.

It is not necessary to enter on the examination of some of the questions which relate to the general system of sewerage of Dublin, as we understand that the grave defects which are known to exist are to be remedied during the construction of the new main sewers by the Corporation of Dublin. (See Report by Mr. Drew and Dr. Graves).

5.—SUBSOIL WATER.

We have carefully inquired into this subject, and have obtained samples of water from wells, used and unused, in various parts of the city. Most of these samples were sewage-polluted—some to a considerable extent. In only two of these wells, both of which are deep and are constantly used, was the water found to be pure. The disused wells were proved in most instances to be full of water to within four to six feet from the surface, and necessarily overflow through the loose stones and earth at their mouths into the surrounding sewage-polluted soil. In February, 1892, after a careful survey of all the evidence obtainable, it was found that the level of subsoil water was very high. At points on the stiff clay soil this is not so; on the other hand, the basements of some houses on the clay were kept constantly moist by water which appeared to gravitate from the surface of the street. Heavy rains cause flooding and saturation of the soil—for example, near the junction of the clay with the gravel at the northern or lower end of Grafton-street. On the other hand, spring tides cause flooding of house basements in the lower area. Members of the Committee have visited cellars which have two feet deep of water in them at spring-tides, and this water is full of foul matter which impregnates the subsoil with noxious material. There is also clear proof that the disuse of pumps

since the introduction of the Vartry has, by reason of the overflow of wells supplied by springs, raised the level of the ground water in parts of Dublin—a result also contributed to by leakage of waste Vartry water. (See Report by Mr. Drew and Dr. Graves).

6.—SUBSOIL DRAINAGE.

Of this there is practically none, so far as any general system of city drainage is concerned, save such as results from leakage into the main drains through defective house junctions. But Trinity College affords an excellent example of the beneficial effects of subsoil drainage which has been systematically carried out for some years. Cases of typhoid are now very rare among the residents in the College, and the few cases that occur are probably imported; but before the subsoil drainage system was carried out several outbreaks of the disease took place.

7.—CAUSES OF DEVELOPMENT OF FEVER IN DUBLIN.

We have carefully considered the reports summarised in the foregoing paragraphs with a view to deduce a satisfactory explanation of the prevalence of typhoid fever in Dublin, and to suggest appropriate remedial measures.

We are of opinion that the facts relating to the rapid development of the disease over practically the whole city area, within two years after the introduction of the Vartry water, admit of comparatively simple interpretation. Before the period in question both house and main-drainage were admitted to be extremely bad, and the soil was necessarily charged with sewage matter; but Dublin was then dependent for water on the limited canal supply, and on wells, hence there could be little dilution of the escaped excreta either in drains or in soil. At that time cases of typhus fever were numerous, while those of enteric or typhoid fever were comparatively rare. Our recent knowledge of the infective bacillus of typhoid explains this, as the microbes are known not to flourish in concentrated sewage, although they rapidly develop in that which is *largely diluted.*

The free use of the abundant and generally pure Vartry supply changed this, as there was much greater direct dilution of sewage than before, and the number of water-closets rapidly increased, while the new drains of the latter were rarely better constructed than those of older date, consequently abundance of very dilute sewage escaped into the soil. This dilution was necessarily increased by waste Vartry water as well as by rains, and by the overflow of the numerous disused city wells, which latter became considerably polluted in process of time. The conditions were therefore soon established under which the typhoid bacilli are known to multiply [illegible]ely, in drains and soil alike, and cases of typhoid fever became nume- (a, as the microbes had access to houses by the various "modes of con- also m[illegible]" specified in Section 3 of this Report.

When the special malarial theory of the development of typhoid fever in Dublin, substantially the same as the above, was brought before the Royal Commission, 1879–80,[a] it was urged that efficient subsoil drainage should be carried out *along with* improvements in house and general sewerage, lest the disease should get a stronger hold of the city. We are not aware that much has been effected in that direction, as it is reported to us on excellent authority that the general level of ground water in Dublin has risen of late years, notwithstanding some improvement in house and main drainage, while the death-rate from typhoid very materially increased up to 1889, and is still very high. As might be anticipated, the lower lying portions of the city suffer most, and possibly the parts resting on gravel rather than on clay, as the former permits more ready infiltration of diluting water from below. But the disease has occurred over practically the whole ill-drained area, as the conditions for its propagation exist wherever badly constructed house drains are to be found which are connected with the general water-carriage system. Again, typhoid fever is more prevalent after the autumnal rains than in spring, as the soil is warmer after the summer and the conditions more favourable to the development of the bacilli. It varies somewhat in character as well as in the number of cases from season to season, as might also be expected, since variations in climatic conditions would naturally affect the development of the infective material as well as the susceptibility of persons exposed to attack.

The explanation above given of the undue prevalence of typhoid fever in Dublin appears to be consistent with all the facts within our knowledge, and has necessarily guided us in making some of the Recommendations which we now beg to submit.

RECOMMENDATIONS.

1. An efficient system of subsoil drainage should be carried out in Dublin along with the main sewerage about to be provided.

2. Efforts should be made to secure more complete returns of cases of typhoid fever in Dublin, under "The Infectious Disease Notification Act, 1889;" and all the suburban townships should put the Act in force.

3. A map or other suitable record should be prepared for each year by the Sanitary Authority of Dublin indicating every house in which typhoid fever has occurred, and such a record should be available for inspection.

4. A constant check on the general condition of the Vartry, or other water supply, should be maintained by daily analyses of samples taken at two or three points in the city. The utmost cleanliness of any pipes

[a] See Memorandum by Prof. Emerson Reynolds, page 163 of Commissioners' Report.

or tubes laid down should be secured; and means should be adopted to guard against the entrance of surface drainage through street fittings.

5. A systematic effort should be made to induce householders to guard against the use, for drinking purposes, of any water stored in cisterns in connection with water-closets, or open in any other way to sources of pollution.

6. Official registration and bi-monthly inspections, without notice, of dairy yards, should bs introduced.

7. There should be a compulsory closing of such dairy yards as may be considered by the Sanitary Authorities a danger to the public health either by—

(*a.*) Proximity to fever hospitals, or to decomposing refuse; or—

(*b.*) Continued infringement of the rules and by-laws.

8. All matters connected with house drainage should be under the direction of a single department of the Sanitary Authority, and inspections should be carried out by properly qualified officials.

9. Complaints from either the landlord, the occupier, or the tenant of a house should be attended to and reported on in writing, within six days.

10. As plans of drains for all houses about to be built must be lodged with the Sanitary Authority under the Public Health By-laws, that authority should ensure that such plans as may be approved by them shall be carried out, by examining the works and tésting the drains before the houses are occupied. Inspections of new buildings, under the Public Health (Ireland) Act, 1878, or other Acts conferring sanitary powers on the Municipal Authority, should be exhaustively carried out.

11. It is desirable that compulsory inspection of houses and connecting drains should be instituted in the following cases:—

(*a*) On the occurrence in two consecutive years of cases of typhoid fever, diphtheria, cholera, or epidemic diarrhœa in more than two houses in any street, square, or place served by the same section of street sewer.

(*b*) On change of occupancy of a house, of which notification to the Sanitary Authority should be compulsory on the landlord, and of which house there has been no sanitary inspection for at least twelve months.

12. A record should be kept of all inspections of drains, of the faults found, and how such faults were remedied.

13. The water-test should be always applied to both house and connecting drains, and the connecting drains should be tested in every case in which the house drains are examined.

14. Every house should have ventilated drains with properly ventilated intercepting traps between the main sewers and house. The ventilators should be carried up the outside of the house.

15. The hopper-barge for removal of refuse should be loaded lower down the river than at present.

16. The recommendations of the Royal Commission of 1879–80, which have not yet been carried out, should at once be adopted.

17. The Dispensary Medical Officers shonld be supplied with simple printed instructions as to disinfection of clothes and discharges, so that they may hand them to their patients.

18. The public should be frequently made acquainted with the facilities afforded for the gratuitous disinfection by the Sanitary Authorities of their houses, clothing, and bedding.

(Signed),

THOMAS DREW.
GEORGE F. DUFFEY.
D. EDGAR FLINN.
R. O'B. FURLONG.
WM. R. GRAVES.
JAMES P. MAUNSELL.
EDMOND J. MCWEENEY.
JOHN WILLIAM MOORE.
C. J. NIXON.
JONATHAN PIM.
FREDERIC W. PIM.
J. EMERSON REYNOLDS.
STEWART WOODHOUSE.

DUBLIN, *November*, 1892.

SUPPLEMENT.

We wish to supplement our report by figures, bringing the enteric fever death-rate up to date; and we think that these figures are highly instructive—

—	Deaths from Enteric Fever in City	Deaths from Enteric Fever in Suburbs	Remarks
1891 .	127	48	Wet and warm autumn.
1892 .	91	23	Dry and cold autumn.
1893 .	(First 24 weeks) 88	(First 24 weeks) 17	Wet, January and February; warm and dry, March, April and May.

It will be seen at a glance that the wet and warm autumn of 1891 appears to have increased the prevalence of enteric fever in the suburbs as well as in the city, while on the other hand in 1893 the enormous

and unprecedented number of deaths from enteric (75 in first quarter and 105 in first twenty-four weeks) have nearly all occurred in the city. The deaths occurred as follows in 1893 :—January, 33 deaths; February, 19 deaths; March, 18 deaths; April, 10 deaths; May, 17 deaths.

The Registrar-General in his quarterly return for the first quarter of 1893 says "enteric fever caused 75 deaths against 57 for the preceding quarter, 30 for the first quarter of last year, and an average of 39 for the first quarter of the years 1883–92." Nearly as many deaths occurred in January, 1893, as in the first *six months* of 1892. This excessive death-rate seems to us to be possibly due to the heavy rainfall early in this year, which came after two months of comparatively dry weather; and we believe that the large monthly death-rate since is due to the phenomenally high temperature of March, April, and May.

It seems obvious that a wet season, if it is accompanied by warm weather, is productive of a large enteric fever death-rate in both city and suburbs, as the figures in 1891 show; while a dry season, if accompanied by a high temperature, proves particularly dangerous in the water-logged portions of the city.

The year 1892 deserves special notice from us, as during this year a much smaller number of deaths occurred than the average for the previous ten years. The rainfall was very evenly distributed throughout all the year, and it was below the average in amount; 11·770 inches fell in first half of the year, and 13·874 inches during second half. The autumn of 1892 was cold, and not favourable to the development of the disease.

In 1891, 8·748 inches fell in the first half of the year, and 19·072 in the second half. It will be found on reference to the figures that enteric fever became almost an epidemic in the second half of 1891.

The death-rate from enteric fever in the city is increasing, and will probably continue to increase until something is done to diminish the pollution of the subsoil water, and to lower its level, especially in the water-logged area.

It gives us pleasure to notice that in the suburbs the death-rate from enteric fever is diminishing.

DUBLIN, *June 29th*, 1893.

APPENDIX.

Report of Typhoid Fever in Dublin for Ten Years. By DR. J. W. MOORE and DR. GEORGE F. DUFFEY.

We desire to call attention to the very unsatisfactory state of notification of infectious diseases in Dublin.

The "Infectious Disease Notification Act, 1889," came into force in the city of Dublin in March, 1890. If we take two years preceding that

event, and compare them with the years 1890 and 1891, as regards the notification of cases of enteric fever to the Corporation of Dublin, and the number of deaths from that disease registered in the Dublin Registration District, we find the following results:—

—	1888	1889	1890	1891
Deaths	168	228	185	191
Notifications	179	365	269	434

Reference to the Registrar-General's Annual Summary of Births and Deaths in Dublin for 1891, shows that, during that year, of 720 enteric fever patients treated in the principal Dublin hospitals, 68 or 9·4 per cent., died. The total number of deaths referred to enteric fever in the Dublin Registration District, during 1891, was 191, being 41 in excess of the average for the ten years 1881–1890, 6 over the number for 1890, but 37 under the number for 1889. If we assume that the death rate among the enteric cases was the same in the district at large as is was in the hospitals, namely, 9·4 per cent., we find that 191 deaths represent no fewer than 2,022 cases. But the notified cases numbered only 434.

Even if we deduct 16 deaths from enteric fever of persons admitted to hospital from without the Registration District, and in addition 48 deaths from the same disease which occurred in the suburbs included in the Registration District, we get the following results:—

Deaths from enteric fever of city residents in 1891 -	127
Notifications - - - - - -	434
Assumed death-rate of enteric fever - - -	9·4
Presumptive number of cases of enteric fever -	1,345
Percentage of Notifications - - - -	31·7

Or not one-third of the cases.

Another matter connected with notification which requires adjustment at the earliest opportunity is the fact, that while the Act is in force in the city, and in the Pembroke, Drumcondra, and Blackrock Townships, the Rathmines Township and the other suburban districts have not resolved to adopt it. So long as this is the case we consider that the beneficial effects of the Act will never be secured to the inhabitants of Dublin and its suburbs. Can anything be more absurd than to have an Act of Parliament enforced on one side of a street—such as Upper Leeson-street—and not enforced on the other side?

As regards the prevalence of enteric fever in Dublin, we have learned from the Registrar-General for Ireland that in 1891 the deaths from this disease were 547 in London and 191 in Dublin (including 16 deaths of persons admitted to hospital from localities outside the Dublin Registra-

tion District). These figures give an annual death-rate of 1·3 per 10,000 of the population in London, and of 5·5 per 10,000 of the population in Dublin. The death-rate from enteric fever was, therefore, more than four times greater in Dublin than it was in London. The following extract is taken from the quarterly return of Births, Deaths, and Marriages for the last quarter of 1891. It shows that Dublin, Cork, and Belfast furnish most of the cases of typhoid fever in Ireland:—

"Owing chiefly to the prevalence of the disease in Dublin Registration District, where there were 96 fatal cases, the mortality from enteric fever was above the average, the deaths numbering 253, or 36 over the average for the fourth quarter of the five years 1886–90, and exceeding the number in each of those periods, except the last quarter of 1889, in which there were 306 deaths from this cause. The 253 deaths consist of 129 in Leinster (including 96—equal to an annual rate of 1·1 per 1,000 living—in the Dublin Registration District). The deaths from the disease in Dublin and Belfast form more than one-half of the total number for Ireland."

Sir Charles Cameron has placed in our hands a copy of a paper, prepared jointly by him and Dr. Grimshaw, on the "Distribution of Enteric Fever in the City of Dublin," up to and including the year 1887. This paper is illustrated by a map of the city, in which are marked by red dots the localities of all the deaths from enteric fever which occurred from January, 1882, to May, 1887. On this map also a line was traced, showing the boundary of the gravel-bed described by the Geological Survey as "Post-tertiary Fluvio-marine Sands, Gravel, and Clays." It was ascertained by the authors of the paper that the deaths from enteric fever on these gravel beds were at the rate of 1 in 365 of the population, while off the gravel the rate was only 1 in 531—the ratio being $1\frac{1}{2}$ deaths on the gravel to 1 death off the gravel.

Sir Charles Cameron has prepared a similar map, which shows the distribution of enteric fever cases from 1882 to 1891 inclusive. Under these circumstances we have refrained from preparing such a map ourselves. Sir Charles has also placed in our hands lists of the streets which have furnished cases of enteric fever from 1887 to 1891 inclusive, together with the number of cases in each instance. This return appears to be by no means exhaustive, as we have already shown, and its usefulness for our present purpose is much lessened by the fact that in no instance is the *number* of the house, furnishing one or more enteric fever cases, given.

Copy of Extracts of "Minutes of Evidence," Royal Sanitary Commission, '79–80. Letter from Dr. Reynolds.

"I have not been able to gather from the generally accurate newspaper reports of the evidence given before you that any official or other witness

has made special reference to one of the (to me) most evident causes of the malarious condition of Dublin—namely, the saturation of our unfortunately retentive soil by soaking from the disused wells which are to be found in large numbers thoughout the city. I, therefore, venture to draw your attention to the matter before the public sittings of the Commission close.

"In Dublin we can only too easily recognise the general insanitary condition which the Germans have long since connected with the presence of accumulations of 'Grundwasser,' and the picture has lately been completed, as I am informed, by the occurrence of some marked cases of ague.

"The important fact that rich and poor alike exhibit diminished vital power is, I believe, in evidence before the Sanitary Commission, and no cause, save one that is general in its operation, will account for a condition which has so materially exaggerated the ordinary ill effects of the close and wretched habitations of the humble, and the doubtfully sewered houses of the wealthier classes.

"I believe that another fact is also in evidence—namely, that the death rate for the two years succeeding the introduction of the Vartry water was lower than before, while the mortality has since risen steadily to an exceptionally high annual rate. This fact proves that the Vartry water was at least innocuous; and we are free to assume that the general health would have continued good had no new danger arisen. That new danger was not any material change in the water, as about 16 out of every 17 of the several hundred analyses of it that I have made since its introduction showed it to be above the standard of purity I have laid down in the 'Manual of Public Health for Ireland' (p. 222), and when out of condition the change was temporary, and due to causes that I am glad to learn will not be allowed to operate in future.

"In view of all the facts the only explanation that seems to me adequate to account for the comparatively sudden transition from a low to a high and increasing death-rate, so soon after the introduction of our generally fine water supply, is that stated at the outset—namely, the continued soakage of the soil with semi-stagnant well water. The city wells were practically closed—and most properly closed—soon after the introduction of the Vartry, but the supply from the many fine springs amongst them did not cease. The only outlet for the semi-stagnant water—known to be mixed with some sewage matter in most cases—has since been soakage through the feebly resisting well walls into the surrounding soil. Surface water, waste Vartry, and imperfect sewers have contributed their quota to the general stagnation; but these are minor causes, doubtless serving to compensate in a bad way for the very imperfect natural drainage, while behind all we have the accumulated masses of well water inevitably soaking the

soil at a rate that seems sufficient to account for the diminished healthiness of Dublin even within two years of the introduction of the Vartry supply.

"But I should not have troubled you with these observations if the recognition of well water soakage as an important factor in the determination of the malarious condition of Dublin had not seemed to be of practical importance, for two principal reasons :—

"1st. Because any sewerage system that does not provide ample subsoil drainage is likely to prove but a partial success.

"2nd. Because it is worthy of consideration whether the existing process might not be reversed with advantage, and the wells be temporarily utilised for sub-soil drainage during the construction of any new sewerage works that may be decided upon. In houses connected with the main sewers the semi-stagnant water could be disinfected and periodically pumped out. I have tried the plan in one case myself, and have already observed the good effect upon the soil."

(To be continued.)

DERMATOL.

G. WICKE (*Intern. klin Rundschau*) reports that he found dermatol powdered over a freshly-cauterised surface killed the pain at once. He has repeatedly verified the fact.—*Les Nouveaux Remèdes*, No. 9.

STRONTIUM BROMIDE IN CHRONIC EPILEPSY.

DR. H. J. BERKLEY, Visiting Physician, City Insane Asylum, Baltimore, publishes, in the *Johns Hopkins Hospital Bulletin*, a paper advocating the use of strontium bromide in cases of epilepsy, as a drug "free from the impurities of the ordinary commercial article which render it unfit for continued use, or even poisonous in moderate doses. In his experience no ill effects followed 80 grain doses thrice daily, and no case failed to improve. No acne appeared; there was less somnolence; the patients were more cheerful; and the quarrelsome less cantankerous. Eleven bad cases were selected for experiment. In a few days all but two improved. When the strontium treatment was discontinued the number of attacks increased. In other cases, less exclusively treated, the number of fits was diminished, and the mental condition of the subjects improved. In the discussion following the paper Dr. Hind remarked that "patients almost always improve for a time under any new remedy, but the number of seizures usually increases again after a time, and the condition of the patient is not permanently improved; . . . temporarily at least the bromide of strontium has been followed by good effects."

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—GEORGE H. KIDD, M.D., F.R.C.S.I.
General Secretary—W. THOMSON, F.R.C.S.I.

SECTION OF OBSTETRICS.

President—ANDREW J. HORNE, F.R.C.P.I.
Sectional Secretary—F. W. KIDD, M.D.

Friday, June 23, 1893.

The PRESIDENT in the Chair.

DR. FLEMING, in the absence of Dr. F. W. KIDD, read the minutes of the last meeting.

Specimens exhibited.

DR. W. J. SMYLY exhibited specimens of (1) tubes, ovaries, and uterus removed for inflammation; (2) ovarian tumours.

He said the first specimen was taken from a lady whom he saw some months previously in consultation with Dr. Doyle. She suffered from hæmorrhage after a miscarriage, and she was curetted by Dr Doyle. When he (Dr. Smyly) examined her he found an enlarged uterus, which was retroverted, and on the left side there was a tumour. He also curetted her, but without any beneficial effect, and he then took her into the Rotunda. On opening the abdomen he found that both the tubes were distended with fluid. The tubes were thickened and diseased, and therefore it became necessary to remove them as well as the ovaries. The case showed that the tubes can get enormously distended without being able to diagnosticate them, and he thought it was not possible to differentiate between distended tubes and coils of intestine. The right tube was so intimately adherent to the uterus that in peeling it off the diseased structure of the uterus gave way. The same thing happened on the left side. He thereupon extirpated it, as if he stitched it up there would be considerable oozing, and the patient made an excellent recovery.

The second specimen was one of a proliferating ovarian cyst, and of a malignant nature. The vagina was of a bluish colour, and also the cervix, and he could not be certain that it was not a case of pregnancy. He told her to return in a month, but two days before the month expired he found her with a temperature of 103° and the abdomen full of free fluid. The vagina was blue and the cervix soft, and on opening the

abdomen the next day he found the tumour had opened, and that there was a very broad fleshy pedicle which he had mistaken for the lower uterine segment. She also had general peritonitis. He washed and sponged her out, and the patient made a good recovery, the wound healing by the first intention.

The third specimen was that of a dermoid. On opening the abdomen the pedicle was the first thing that presented itself, so he immediately secured it, and then tried to break down the adhesion, but failed. He then tapped the dermoid, and when he had finished enucleating it he put in a drainage-tube, and the patient made an absolutely good recovery.

The fourth specimen was one of an ordinary proliferating cyst of the ovary. The operation was an easy one, and the recovery good.

The next specimen was a myoma attached to the anterior wall of the uterus at the fundus. He opened the abdomen, put on Tait's clamp, and incised the tumour. It left a comparatively small hole in the uterus, and then he passed Martin's sutures completely under the cavity and tied them over the top. He left in a drainage-tube, and a fair amount of discharge came away, and the patient is doing well.

The last specimen was removed from a woman, aged fifty-five, who suffered from constant menorrhagia. He curetted her, and on returning to him some time ago he was astonished to find a tumour at the back of the uterus. It had the elastic feel of a myoma, and the uterus moved with it. He thought, from the age of the patient and the rapidity of the growth, that it was malignant, and that the best thing to do was to extirpate the uterus. Owing to adhesions it was a considerable time before he got the uterus separated, and he found a small cyst between the layers of the broad ligament on the left side. It took him a considerable time to control the hæmorrhage after the operation, but the patient was now doing well.

Dr. Purefoy asked as to the cause of the hæmorrhage in the first case. He would like to know whether Dr. Smyly thought the menorrhagia was due to the metritis or to the disease of the appendages.

The President inquired whether the woman had any family or abortions as an assignable cause for the distension of the tubes.

Dr. Smyly, in reply to Dr. Purefoy, said that probably both the metritis and the tubal disease caused the hæmorrhage. In reply to the President, he said the patient had had children.

Report of the Rotunda Hospital for Three Years, 1889–92.

A discussion on the Report of the Rotunda Hospital for three years—1889–92—by Dr. W. J. Smyly and Dr. Glenn was then opened.

Dr. A. J. Smith said the report was compiled with very great care and accuracy, and admirably condensed. In judging of such reports they have to deal first with the character of the cases, and, secondly, with the

morbidity; and then they had to contrast the treatment adopted by the Rotunda School with that of the Continent. He should personally congratulate Dr. Smyly on the head of mortalities. They were simply remarkable, and should satisfy every one. There was no death from puerperal fever for the last two years. Under the head of morbidity it seems an alarming thing that one woman in every nine should have a temperature of over 100·4° in the performance of a physiological function. However, he thought this was more apparent than real, as the percentage of recoveries was over 90 per cent. without any morbidity. He thought Dr. Smyly hit the nail on the head when he found that a great percentage of the high temperatures was due to the patients washing themselves during the puerperal period, and he was pleased to see that since the adoption of new methods the results have been better. He was glad to note that Dr. Smyly had gone back again to the method of washing out the uterus with antiseptics instead of with plain water. He noticed a slight change under the head of operative treatment. Dr. Smyly only employed the forceps once in 33 cases, whereas Dr. Macan employed them as often as one in 16. Dr. Smyly employed the time test—*i.e.*, if a patient was four or five hours in labour in the second stage she should be delivered by the forceps. Still, in the old times the forceps were employed twice as often, and it seemed to him as if the old primiparæ must have rather a good time of it. He thought it was rather remarkable the small number of old primiparæ in which Dr. Smyly used the forceps. There was no mention of ophthalmia neonatorum, and he would like to know what precautions were adopted as to its prevention. He thought the mortality from eclampsia was very great—6 out of 17. He did not think the treatment for that disease was really satisfactory yet. With regard to accidental hæmorrhage he thought it was a very unfortunate thing to have to treat, but in his opinion placenta prævia was a very manageable complication. He was afraid that plugging the uterus might some day turn out to be not as safe a method as they thought, and where they had a flaccid uterus it took a large amount of material.

Dr. Purefoy said he had some idea of the enormous labour and anxiety involved in the compilation of such a report, and he thought it would possibly add to its value if they could have it at the end of each year. He noticed that there were some cases of the occipito-posterior position, and he confessed that some such cases during the past few years had given him a great deal of trouble and anxiety. He would like to know as to the success of the treatment in these cases. With regard to the treatment of post-partum hæmorrhage, he dissented from the method of plugging the uterus with iodoform gauze. There was no doubt of its efficacy, but, at the same time, it was a very risky method. He preferred the perchloride of iron treatment. He thought bleeding in some cases of

eclampsia of great value, although it is opposed by some of the most reliable authorities. He felt that they had in the report a document of great value, and it proved that the time-honoured Institution was splendidly maintaining its prestige under the present management.

Dr. S. W. Thompson said he was in charge of a hospital—that of the South Dublin Union—where very little precautions were taken, and out of 960 deliveries they had not a single death from septicæmia. Of course they had no examinations to speak of, such as are practised in the Rotunda by the students. Then, as to the post-partum hæmorrhage, he never had a case out of the 960 which needed an injection, not even in his private practice. He was glad to hear that placenta prævia was not so formidable.

The President said the first thing they looked to was to the mortality of the institution. Hitherto it was believed that a Lying-in Hospital was very unsafe owing to the danger of septicæmia. Dr. Smyly has proved that a large Lying-in Hospital is the safest place, because if we look at the last year we find that not a single death occured from septic infection, even though vaginal examinations had to be made by the students. The morbidity was really a great test as to the health of the institution, and they found that the first year it was frequent, the second year less so, and very much decreased the last year. Dr. Smyly has even accredited deaths to the institution of patients who left the hospital after the ninth day, and were re-admitted again. When he was Assistant-Master the number of forceps cases were one in eight, while he now saw that in 1889–90 there were 47 cases of forceps, and that in 1890–91 they fell to 20, while in 1891–92 they rose again to 38. He could not find any variation in the number of primiparæ to account for this. He thought, therefore, that it was a useful thing to have a triennial report in order that they might compare one year with another. With regard to eclampsia, they all knew the fatality of that affection, and the high mortality seemed to him merely a coincidence, as a succession of very severe cases were often met with. His experience of post-pártum hæmorrhage was that it seemed fairly frequent. With regard to plugging with iodoform gauze, he only adopted it in one case, and that was successful; the only objection is that you must have a large quantity of it with you. He thought it possibly causes coagulation of the blood in the same manner as cotton wadding. He thought that it acted, however, as a form of drainage tube, and if the patient is already exhausted, a little further discharge might kill her. He agreed with Dr. Purefoy that there was really very little pain from the perchloride of iron, but he thought the danger was that it is used too late. If they took Dr. Barnes' advice and used it early the results would be better. At the same time he could not forget cases of death which resulted from the injection of the iron. The post-mortem revealed that it had entered the sinuses and found its way to the heart.

This was especially liable to occur in cases where the woman was exhausted and had no vital energy left.

Dr. Smyly said he did not do this report single-handed. All the hard work was done by Dr. Glenn, who produced these admirable tables. As the representative of the hospital he felt thankful that the report has been received so favourably. When he first went to the hospital he found the forceps were put on very frequently, but he did not think it very scientific, so he determined not to put them on except in case of danger to the mother or child, and then he found that the necessity of putting them on was very infrequent indeed; also that the woman suffered a great deal of unnecessary pain. Then as to the plugging with iodoform gauze, he merely stated that for the last two years they plugged with the gauze, and that they had no necessity for the iron. If necessary he would have used it. He thought, however, the iron was much more dangerous. Of course the iron was antiseptic, but when it comes to clot it is very liable to become putrid, and therefore it is not absolutely safe. A great amount of gauze is not necessary either. He thought the gauze simply acted by exciting reflex action.

The Section then adjourned.

CHOLERA AND NITRITES.

In the *Gazette Médicale de Paris* of 1st July appears a notice of a paper by Professors Emmerick and Tsuboi, of Munich, devoted to showing that the symptoms and virulence of Asiatic cholera are due to the nitrites produced by the specific bacillus. They ascertained that 50 mgrms. of sodium nitrite, introduced into the stomach or injected beneath the skin, was rapidly fatal to guinea-pigs. Rabbits died in one hour after administration of 20 cgrms. From 0·3 to 1 grm. introduced into the stomach killed dogs with symptoms which offer "a certain similarity" to those of cholera. In the human subject 0·5 to 0·6 grm. swallowed rapidly produced choleraic symptoms; and Dr. Atkinson is cited in evidence of such result having followed the ingestion of 0·2 grm. In one point the conformity of the two intoxications fails—the discharges do not, in the case of nitrite, possess the rice-water appearance characteristic of cholera. This is explained by the fact that the nitrites, directly administered, are absorbed by the stomach and do not reach the intestine. It is noted that in nitrite poisoning hæmoglobin appears in the blood; and this has also been observed in cases of guinea-pigs dying of Asiatic cholera, but not in the same animals killed in normal condition. It has been long known that the cholera bacillus possesses in a high degree the property of producing nitrous acid from nitrates, and even from ammonium carbonate.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, August 12, 1893.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	July 22	July 29	Aug. 5	Aug. 12		July 22	July 29	Aug. 5	Aug. 12
Armagh -	21·0	14·0	14·0	14·0	Limerick -	25·3	18·2	16·8	15·4
Belfast -	29·7	28·9	29·1	28·3	Lisburn -	12·8	21·3	25·7	0·0
Cork -	17·3	17·3	11·8	18·7	Londonderry	6·3	14·1	18·8	33·0
Drogheda	30·7	4·4	30·7	30·7	Lurgan -	27·4	18·2	4·6	18·2
Dublin -	29·4	28·5	27·7	25·8	Newry -	36·2	12·1	12·1	0·0
Dundalk -	8·4	25·1	0·0	4·2	Sligo -	0·0	30·5	20·3	10·2
Galway -	15·1	15·1	18·9	3·8	Waterford -	37·5	42·5	27·5	30·0
Kilkenny	47·2	9·4	37·8	9·4	Wexford -	27·1	22·6	27·1	45·2

In the week ending Saturday, July 22, 1893, the mortality in thirty-three large English towns, including London (in which the rate was 22·5), was equal to an average annual death-rate of 25·0 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·8 per 1,000. In Glasgow the rate was 23·0, and in Edinburgh it was 19·6.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 25·9 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 7·1 per 1,000, the rates varying from 0·0 in Galway, Lisburn, Drogheda, and Sligo to 17·5 in Waterford—the 15 deaths from all causes registered in this last-named district comprising 5 from measles (being 1 under the number from that disease registered in Waterford during the preceding week), 1 from diphtheria, and 1 from

diarrhœa. Among the 137 deaths from all causes registered in Belfast are 3 from measles, 5 from whooping-cough, 1 from diphtheria, and 47 from diarrhœa. The 25 deaths in Cork comprise 1 from enteric fever and 3 from diarrhœa. The 9 deaths in Newry comprise 3 from diarrhœa.

In the Dublin Registration District the registered births amounted to 180—99 boys and 81 girls; and the registered deaths to 203—98 males and 105 females.

The deaths, which are 55 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 30·3 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted into public institutions from localities outside the district, the rate was 29·4 per 1,000. During the first twenty-nine weeks of the current year the death-rate averaged 27·2, and was 2·0 under the mean rate in the corresponding period of the ten years 1883–1892.

Fifty-five deaths from zymotic diseases were registered, being 9 over the number for the preceding week, and 32 in excess of the average for the 29th week of the last ten years. They comprised 2 from measles, 3 from influenza and its complications, 2 from whooping-cough, 1 from diphtheria, 4 from enteric fever, 35 from diarrhœa (against an average of 6 for the corresponding week of the last ten years), and 1 from dysentery. Thirty-two of the 35 deaths from diarrhœa were of children under 5 years of age, 24 being infants under 1 year old.

The number of cases of enteric fever admitted to hospital was 7, being 4 under the admissions for the preceding week, and 1 under the number for the week ended July 8. Seven enteric fever patients were discharged, 1 died, and 32 remained under treatment on Saturday, being 1 under the number in hospital on Saturday, July 15.

Only 4 cases of scarlatina were admitted to hospital, being 4 under the admissions for the preceding week, and 5 under the number for the week ended July 8: 6 scarlatina patients were discharged, and 51 remained under treatment on Saturday, being 2 under the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 8 cases of measles, but no cases of typhus were received: 11 cases of measles and 5 of typhus remained under treatment in hospital on Saturday.

Twenty-seven deaths from diseases of the respiratory system were registered, being 6 in excess of the average for the corresponding week of the last ten years, and 3 over the number for the week ended July 15. They comprised 11 from bronchitis, 9 from pneumonia or inflammation of the lungs, and 4 from croup.

In the week ending Saturday, July 29, the mortality in thirty-three large English towns, including London (in which the rate was 21·0),

was equal to an average annual death-rate of 22·6 per 1,000 persons living. The average rate for eight principal towns of Scotland was 19·1 per 1,000. In Glasgow the rate was 20·6, and in Edinburgh it was 14·4.

The average annual death-rate in the sixteen principal town districts of Ireland was 25·6 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 6·7 per 1,000, the rates varying from 0·0 in seven of the districts to 12·6 in Dundalk—the 6 deaths from all causes registered in that district comprising 3 from dysentery. Among the 147 deaths from all causes registered in Belfast[a] are 6 from measles, 2 from scarlatina, 5 from whooping-cough, 1 from simple continued fever, 4 from enteric fever, and 37 from diarrhœa. The 25 deaths in Cork comprise 1 from scarlatina and 3 from diarrhœa, and the 17 deaths for Waterford comprise 3 from measles (being 2 under the number from that disease registered in Waterford during the preceding week), 1 from enteric fever, and 1 from diarrhœa. The Registrar of Belfast No. 9 District makes reference to the prevalence of English cholera in his district, and the Assistant-Registrar of Dundalk refers to the presence of dysentery in Dundalk Workhouse.

In the Dublin Registration District the registered births amounted to 193—87 boys and 106 girls; and the registered deaths to 196—103 males and 93 females.

The deaths, which are 45 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 29·2 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted into public institutions from localities outside the district, the rate was 28·5 per 1,000. During the first thirty weeks of the current year the death-rate averaged 27·3, and was 1·7 under the mean rate in the corresponding period of the ten years 1883-1892.

Fifty-four deaths from zymotic diseases were registered, being 34 in excess of the average for the 30th week of the last ten years, but 1 under the number for the week ended July 22. They comprised 1 from measles, 2 from influenza and its complications, 4 from whooping-cough, 2 from diphtheria, 1 from enteric fever, 35 from diarrhœa (against an average of 5 for the corresponding week of the last ten years), and 1 from erysipelas. Thirty of the 35 deaths from diarrhœa were of children under 5 years of age, 26 being infants under 1 year old.

Nine cases of enteric fever were admitted to hospital, being 2 over the admissions for the preceding week, but 2 under the number for the week ended July 15. Two enteric fever patients were discharged, and

[a] The death-rate in Belfast for the week ended 22nd July was understated in the Return for that week, 14 deaths having been accidentally omitted from the Tables.

39 remained under treatment on Saturday, being 7 over the number in hospital on Saturday, July 22.

Six cases of scarlatina were admitted to hospital, being 2 in excess of the admissions for the preceding week, but 2 under the number for the week ended July 15. Nine scarlatina patients were discharged, and 48 remained under treatment on Saturday, being 3 under the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 6 cases of measles, but no cases of typhus were received: 14 cases of measles and 2 of typhus remained under treatment in hospital on Saturday.

Twenty deaths from diseases of the respiratory system were registered, being 1 in excess of the average for the corresponding week of the last ten years, but 7 below the number for the week ended July 22. They comprised 13 from bronchitis and 5 from pneumonia or inflammation of the lungs.

In the week ending Saturday, August 5, the mortality in thirty-three large English towns, including London (in which the rate was 20·8), was equal to an average annual death-rate of 21·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 19·4 per 1,000. Both in Glasgow and in Edinburgh the rate was also 19·4.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 24·9 per 1,000 of the population, based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 6·6 per 1,000, the rates varying from 0·0 in Dundalk, Wexford, and Lurgan, to 11·0 in Belfast—the 148 deaths from all causes registered in the last-named district comprising 10 from measles, 3 from scarlatina, 7 from whooping-cough, 1 from diphtheria, and 35 from diarrhœa. Among the 11 deaths from all causes registered in Waterford are 2 from measles, 1 from diphtheria, and 1 from diarrhœa. The 8 deaths in Kilkenny comprise 1 from scarlatina and 1 from simple continued fever.

In the Dublin Registration District the registered births during the week amounted to 166—77 boys and 89 girls; and the registered deaths to 194—98 males and 96 females.

The deaths, which are 56 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·9 in every 1,000 of the population. Omitting the deaths (numbering 8) of persons admitted into public institutions from localities outside the district, the rate was 27·7 per 1,000. During the first thirty-one weeks of the current year the death-rate averaged 27·3, and was 1·4 under the mean rate in the corresponding period of the ten years 1883–1892.

Fifty-four deaths from zymotic diseases were registered, being equal

to the number for the preceding week, and 33 over the average for the 31st week of the last ten years. They comprised 5 from measles, 1 from scarlet fever (scarlatina), 2 from influenza and its complications, 4 from whooping-cough, 2 from diphtheria, 1 from ill-defined fever, 1 from enteric fever, 5 from simple cholera and choleraic diarrhœa, 26 from diarrhœa (being 9 under the number from that cause in the preceding week, but 20 over the average for the 31st week of the last ten years), 1 from dysentery, and 2 from erysipelas. Twenty-two of the 26 deaths from diarrhœa were of children under 5 years of age, including 20 infants under 1 year old.

Twenty-three cases of enteric fever were admitted to hospital against 9 admissions for the preceding week; 2 enteric fever patients were discharged, and 60 remained under treatment on Saturday, being 21 over the number in hospital on Saturday, July 29.

Six cases of scarlatina were admitted to hospital, being equal to the admissions for the preceding week: 8 patients were discharged, 1 died, and 45 remained under treatment on Saturday, being 3 under the number in hospital at the close of the preceding week.

Deaths from diseases of the respiratory system, which had fallen from 27 for the week ended July 22 to 20 for the following week, further declined to 13, or 3 under the average for the corresponding week of the last ten years. They comprised 9 from bronchitis and 2 from pneumonia or inflammation of the lungs.

In the week ending Saturday, August 12, the mortality in thirty-three large English towns, including London (in which the rate was 19·6), was equal to an average annual death-rate of 20·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 19·7 per 1,000. In Glasgow the rate was 21·2, and in Edinburgh it was 16·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 24·3 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 6·4 per 1,000, the rates varying from 0·0 in nine of the districts to 10·6 in Belfast—the 144 deaths from all causes registered in that district comprising 6 from measles, 7 from whooping-cough, 1 from diphtheria, 4 from enteric fever, and 36 from diarrhœa. Among the 27 deaths from all causes registered in Cork are 1 from diphtheria, 1 from enteric fever, and 6 from diarrhœa. The 11 deaths in Limerick comprise 1 from typhus and 1 from diarrhœa. The 21 deaths in Londonderry comprise 2 from measles and 1 from whooping-cough.

In the Dublin Registration District the registered births amounted to

178—91 boys and 87 girls; and the registered deaths to 175—89 males and 86 females.

The deaths, which are 22 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·1 in every 1,000 of the population. Omitting the deaths (numbering 2) of persons admitted into public institutions from localities outside the district, the rate was 25·8 per 1,000. During the first thirty-two weeks of the current year the death-rate averaged 27·3, and was 1·2 under the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 52, being 2 under the number for the preceding week, but 28 over the average for the 32nd week of the last ten years. The 52 deaths comprise 1 from measles, 1 from influenza, 5 from whooping-cough, 5 from enteric fever, 4 from simple cholera and choleraic diarrhœa, 30 from diarrhœa (being 4 over the number from that cause in the preceding week, and 21 in excess of the average for the 32nd week of the last ten years), and 1 from erysipelas. All the deaths from diarrhœa occurred among children under 5 years of age, 28 being of infants under 1 year old.

The number of cases of enteric fever admitted to hospital was 19, being a decline of 4 as compared with the admissions for the preceding week, but 10 over the number for the week ended July 29. Five enteric fever patients were discharged, 1 died, and 73 remained under treatment on Saturday, being 13 over the number in hospital at the close of the preceding week.

Nine cases of scarlatina were admitted to hospital, being 3 over the admissions for the preceding week: 3 patients were discharged, and 51 remained under treatment on Saturday, being 6 over the number in hospital on Saturday, August 5.

The hospital admissions for the week included, also, 5 cases of measles and 1 case of typhus: 12 cases of the former and 1 case of the latter disease remained under treatment in hospital on Saturday.

Only 12 deaths from diseases of the respiratory system were registered, being 6 under the average for the corresponding week of the last ten years, and 1 under the low number for the week ended August 5. They comprised 7 from bronchitis and 3 from pneumonia or inflammation of the lungs.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of July*, 1893.

Mean Height of Barometer, - - -	29·896 inches.
Maximal Height of Barometer (on 27th, at 9 p.m.), -	30·234 ,,
Minimal Height of Barometer (on 19th, at 7 15 p.m.),	29·429 ,,
Mean Dry-bulb Temperature, - - -	60·5°.
Mean Wet-bulb Temperature, - - -	56·7°.
Mean Dew-point Temperature, - - -	53·5°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·410 inch.
Mean Humidity, - - - - - -	78·5 per cent.
Highest Temperature in Shade (on 23rd), - -	74·5°.
Lowest Temperature in Shade (on 22nd), - -	50·0°.
Lowest Temperature on Grass (Radiation) (on 21st and 22nd) - - - - - -	44·8°.
Mean Amount of Cloud, - - - - -	62·8 per cent.
Rainfall (on 12 days), - - - -	2·042 inches.
Greatest Daily Rainfall (on 15th), - - -	·871 inch.
General Directions of Wind, - - -	W., N.W., N.E.

Remarks.

A changeable, rather showery, but warm month, of high mean temperature and almost average rainfall, with a decided prevalence of north-easterly and north-westerly winds.

In Dublin the arithmetical mean temperature (61·6°) was decidedly above the average (60·6°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 60·5°. In the twenty-eight years ending with 1892, July was coldest in 1879 (the "cold year") (M. T. = 57·2°). It was warmest in 1887 (M. T. = 63·7°), and in 1868 (the "warm year") (M. T. = 63·5°). In 1886 the M. T. was 61·0°; in 1888 it was as low as 57·3°; in 1889 it was 58·7°; in 1890, 58·1°; in 1891, 59·0°; and in 1892, 57·8°. From this, July, 1887 proves to have been the warmest since the present records commenced, whilst July, 1879, was the coldest. In only 2 years since 1864 was July colder than in the year 1892.

The mean height of the barometer was 29·896 inches, or ·019 inch below the corrected average value for July—namely, 29·915 inches. The mercury marked 30·234 inches at 9 p.m. of the 27th, and fell to 29·429 inches at 7 15 p.m. of the 19th. The observed range of atmospherical pressure was, therefore, 0·805 inch—that is, a little more than eight-tenths of an inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 60·5°, or 0·6° above the value

for June, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.* — *min.* × ·465), the value was 61·1°, or 0·9° above the average mean temperature for July, calculated in the same way, in the twenty-five years, 1865–89, inclusive (60·2°). The arithmetical mean of the maximal and minimal readings was 61·6°, compared with a twenty-five years' average of 60·6°. On the 23rd the thermometer in the screen rose to 74·5°—wind, S.W.; on the 22nd the temperature fell to 50·0°—wind, W.N.W. The minimum on the grass was 44·8° on the 21st and again on the 22nd.

The rainfall was 2·042 inches, distributed over 14 days. The average rainfall for July in the twenty-five years, 1865–89, inclusive, was 2·420 inches, and the average number of rainy days was 17·2. The rainfall, therefore, was considerably below the average, while the rainy days were also below it. In 1880 the rainfall in July was very large—6·087 inches on 24 days; in 1871 also 4·391 inches fell on 28 days. On the other hand, in 1870, only ·539 of an inch was measured on 8 days; in 1869 the fall was only ·739 of an inch on 9 days; and in 1868 only ·741 of an inch fell on but 5 days. In 1892, 1·952 inches fell on 12 days.

High winds were noted on 9 days, but did not attain the force of a gale on any occasion. Temperature reached or exceeded 70° in the screen on 8 days. In July, 1887, temperature reached or exceeded 70° in the screen on no fewer than 17 days. In July, 1888, the maximum was only 68·7°. In July, 1891, maxima of 70° were reached on only 3 days, and in July, 1892, on only 2 days. Severe thunderstorms occurred on the 12th, and distant thunder was heard on the 13th.

Saturday, the 1st, was very fine and warm, with beautiful cirro-cumuli travelling from S.

Warm and generally favourable weather held during the week ended Saturday, the 8th. In parts of England severe thunderstorms and heavy rains were felt in the beginning—on Sunday and Monday in the N. and N.E. as well as in the North Midland Counties; on Tuesday, in the S.W. and S. of that country and in the English Channel. On Saturday electrical disturbances were again prevalent. On Monday the rainfall was 1·38 inches at York and 1·8 inches at Stoke-on-Trent; on Tuesday 2·05 inches of rain fell at Prawle Point in Devonshire, 1·15 inches at Jersey, ·91 inch at Hurst Castle, in Hants, and ·57 inch at Dungeness in Kent. The distribution of atmospherical pressure was irregular and shifting until Thursday, when the barometer began to give way steadily in the west, and freshening S.E. and S. winds sprang up on the Irish coasts, with heavy rain at Valentia Island (·68 inch to 8 a.m. of Friday). The heat in England was very great on Sunday, when the thermometer rose to 83° at Oxford, 84° in London and at Loughborough, and 85° at Cambridge; and also on Thursday, when the maxima were 81° at Loughborough, 83° at Oxford, 84° in London, and 86° at Cambridge. On Friday the thermometer rose to 90° at Cambridge, 88° at Lough-

borough, and 87° in London. At 8 a.m. of Saturday temperature was 80° in London and 79° at Cambridge, and the thermometer subsequently rose to 87° in London, 92° at Cambridge, and 96° locally at Elsing in Norfolk. In Ireland, the highest readings were about 12° to 15° lower—75° being touched at Belmullet, Co. Mayo, on Wednesday. In Dublin the maximum exceeded 70° on five days, the highest reading of all being 71·8 on Monday and Saturday. The minimum in the screen was 54·2° on Thursday. The mean height of the barometer was 29·960 inches, pressure falling from 30·201 inches at 9 a.m. of Monday (wind, N.E.) to 29·591 inches at 9 p.m. of Saturday (wind, S.E.). The corrected mean temperature was 63·2°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 62·8°. The rainfall was ·187 inch on one day—·184 inch of the amount fell on the morning of Sunday, July 9. The prevailing winds were first N.E., afterwards S.E.

Very unsettled, rainy, thundery weather held during the greater part of the week ended Saturday, the 15th, and temperature showed a decided falling off compared with the previous sennight. At 8 a.m. of Sunday a depression lay over the British Islands, its centre stretching from Ulster to the Lowlands of Scotland. It caused heavy rains in many places—2·81 inches being measured at Malin Head on Monday morning. In Dublin rain fell in torrents from 11 to 11·30 a.m. of Sunday, and on this day as well as on Monday thunderstorms occurred over the greater part of England. On Tuesday a new depression appeared off the S.E. of Ireland, whence it travelled slowly eastwards and north-eastwards to the Kattegat, which it reached on Friday morning. This system was accompanied by severe thunderstorms in many places. On Wednesday two distinct storms passed over Dublin—the second causing torrents of rain (·550 inch) in an hour (3 15 to 4 15 p.m.). At the Ordnance Survey Office, Phœnix Park, the rainfall on this day was 1·120 inches. Next day also there were heavy thundershowers near this city. Friday proved cloudy and cool, but rainless. On Saturday, however, showers again set in, as a new and large but shallow depression advanced over our northern coasts. In Dublin the mean height of the barometer was 29·768 inches, pressure ranging from 29·532 inches at 9 a.m. of Sunday (wind, W.) to 30·019 inches at 9 p.m. of Friday (wind, N.). The corrected mean temperature was 58·0°, the mean dry bulb readings at 9 a.m. and 9 p.m. being 58·6°. On Wednesday temperature rose to 67·9° in the screen, on Friday it fell to 51·8°. The rainfall measured 1·389 inches, on five days, ·871 inch being registered on Wednesday and ·349 inch on Sunday. The wind was variable—S., N.E., N., and W. being the predominant directions.

Changeable, showery, but withal favourable weather held throughout the week ending Saturday, the 22nd. The general distribution of atmospherical pressure was cyclonic in and near the British Isles—primary

systems of some depth passing eastwards across the North of Scotland, while numerous secondary systems brought rain and squalls to the southern half of the United Kingdom also. Owing to the amount of cloud and to the freshness of the S.W. to N.W. winds which prevailed, temperature never became very high and seldom exceeded 70° even in the S.E. and centre of England. On the Continent, when the barometer was higher and conditions were at times anticyclonic, much warmer weather was experienced—at least towards the close of the week. Thus on Thursday the thermometer rose in the shade to 82° in Paris and 88° in Berlin, while the maximum on this day in London was only 68°. At 8 a.m. of Friday temperature was as high as 72° at Stockholm. In Dublin the extremes of temperature for the week occurred on Saturday —the minimum being 50·0° and the maximum 68·9°. The mean height of the barometer in this city was 29·788 inches, pressure ranging from 30·031 inches at 9 p.m. of Monday (wind, N.N.W.) to 29·429 inches at 7·15 p.m. of Wednesday (wind, W.), from which low value it again increased to 30·037 inches at 9 p.m. of Saturday (wind, W.S.W.). The corrected mean temperature was 59·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 59·1°. The rainfall amounted to ·350 inch on five days—·161 inch being registered on Tuesday. The prevailing winds were westerly (S.W. and N.W.).

While changeable and far from settled, the weather was chiefly fine and dry in the period ended Saturday, the 29th. The general distribution of pressure was cyclonic in the North, anticyclonic in France and Germany, as well as in the British Islands on Thursday, the 27th, when an area of high pressure passed eastwards across Ireland to England. The fine, quiet weather accompanying this system was of short duration, and on Friday a fresh depression appeared off the N.W. of Scotland, causing clouds to increase and a shift of wind to S.W., from which point it freshened at some stations. Before the anticyclonic period thunderstorms occurred very generally over the midland, eastern, and southeastern parts of England on Wednesday, but the attendant rainfall was not large, In Manchester, however, ·810 inch fell. Showers fell in many places on the day named, and with the advent of northerly winds and a clearing sky temperature fell fast in the succeeding night. In Dublin the mean height of the barometer was 30·005 inches—pressure ranging between 29·747 inches at 9 p.m. of Monday (wind, W.) and 30·234 inches at 9 p.m. of Thursday (wind N.). The corrected mean temperature was 61·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 61·3°. On Sunday the thermometer rose to 74·5° in the screen; on Thursday it fell to 50·2° The rainfall amounted to ·063 inch, of which ·058 inch was measured on Saturday. The prevalent winds were between W. and N.

Sunday, the 30th, was bright and fair in Dublin, but heavy showers

fell in Edinburgh and thunderstorms occurred along the east coast of England. Monday, the 31st, was changeable and showery in many places.

The rainfall in Dublin during the seven months ending July 31st amounted to 11·666 inches on 92 days, compared with 13·722 inches on 109 days during the corresponding period in 1892, 10·935 inches on 92 days in 1891, 15·587 inches on 118 days in 1890, 13·146 inches on 112 days in 1889, 15·994 inches on 109 days in 1888, 7·935 inches on 80 days in 1887, and a twenty-five years' average of 14·733 inches on 112·6 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in July was 1·290 inches on 15 days, compared with 2·925 inches on only 10 days in 1892, 1·325 inches on 18 days in 1891, and 1·489 inches, distributed over 18 days, in 1890. Of the total rainfall ·360 inch fell on the 9th and ·330 inch on the 13th. The total fall since January 1 has been 13·066 inches on 90 days, compared with 16·708 inches on 90 days in 1892.

At Cloneevin, Killiney, Co. Dublin, the rainfall in July was 1·36 inches on 17 days, compared with an eight years' average of 1·864 inches on 15 days. On the 13th the rainfall was ·26 inch. Since January 1, 1893, 11·05 inches of rain have fallen at this station (Cloneevin).

COLD BATHS AND LEUCOCYTES IN ENTERIC FEVER.

We learn from the *Johns Hopkins Hospital Bulletin* that Professor Osler has been following up the suggestion of Professor Winternitz, of Vienna, that the beneficial effects of cold baths in enteric and other exanthematous fevers are due to the influence of cold in promoting leucocytosis and consequent destruction of pathogenic organisms. Professor Osler counted the leucocytes before and after twenty-minute baths at 70° F. in twenty cases of enteric fever, one case of pneumonia, and in two healthy persons. Of the twenty enteric observations the number of the leucocytes had increased after the baths in eighteen, and in two there was a slight diminution. In the case of acute pneumonia there was little change. In the first experiment on the healthy individual there was a slight increase of about 20 per cent. fifteen minutes after a twenty-minute bath, the subject being warm and red and not shivering. In the second experiment, immediately after the bath, the subject being blue and shivering, the number of leucocytes had quadrupled. Dr. Osler suspects that such increase is rather a local than a general condition; that the action of cold in depressing the peripheral circulation produces accumulation of leucocytes in the small peripheral vessels and capillaries. He is carrying on a series of observations with a view to deciding the question thus suggested.

PERISCOPE.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The following gentlemen, having passed the requisite examination, have been elected Fellows of the College:—Joseph Fuller, L.R.C.S.E. and M.R.C.P., Irel., Long Ashton, Bristol; Edward Barnard Fuller, M.B. and C.M., Edin., and L.R.C.S.E., Cape Town; Roland James Pope, M.D., L.R.C.S.E., 19 Coates-crescent, Edinburgh; Edward Reginald Morton, L.R.C.P. and S.E., &c., City Hospital, Edinburgh; James Crawford Gibb-Macnab, M.B. and C.M., and L.R.C.S.E., Dysart; Julian Augustus Lea, L.R.C.S., Edin. and Lond., and M.R.C.S., Eng., Carnarvon Hospital, Kimberley, Cape Colony; Arthur Conning Hartley, M.D. and L.R.C.S.E., 12 Victoria-terrace, Bedford; and John Hardie, M.B., C.M., and L.R.C.S.E., 12 Newington-road, Edinburgh.

SHORT PAPERS.

The Journal of the American Medical Association quotes the following from the *Boston Medical and Surgical Journal*:—"The adoption of a 'Ten-Minute Paper,' rule has recently become a marked feature in the work of the New York Academy of Medicine, especially in the Section in Pædiatrics, and has resulted in a marked increase in the attendance at the meetings, and a large number of concise and interesting papers. The instruction to writers of papers by the chairman contains the following:—'Hippocrates and Galen may be passed with very slight notice, as they have been dead for some time, and their opinions are somewhat obsolete. Scratch out the formal introduction and condense the body of the paper. End the paper where the subject matter ends, making its action like that of a piston syringe—begin, spatter, stop.'"

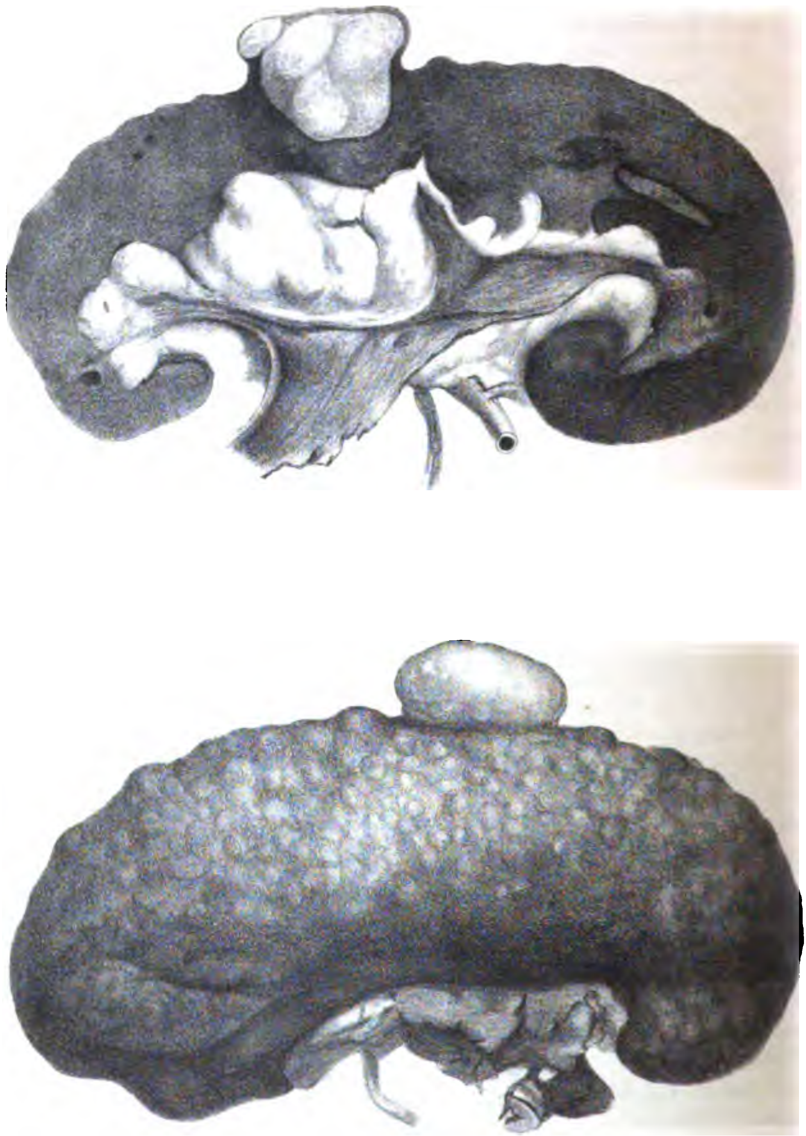
CINCINNATI HOSPITAL.

We have received the thirty-second Annual Report of this hospital—that for 1892. Only two or three matters seem of special interest. The gross cost of maintenance of each patient daily was $1·0972—Mr. Mantalini would have said, "The decimal be dem'd." The number of patients in the female wards having fallen low, the experiment was tried of closing the ward for "colored" females, and distributing them "among the medical, surgical, and obstetrical wards formerly used for white women." To the obvious amazement of the superintendent "no discord whatever has occurred, and results have proven that. . . . . this consolidation was a wise action." Southern hospitals please copy! The following were the number of patients treated during the year, and the death-rate

mitted the passage of No. 5 catheter. He presented a slight degree of general anasarca. His superficial arteries were tortuous and rigid. Mentally he suffered from chronic paranoia with persecutory delusions. His general condition was feeble throughout. The immediate apparent cause of death was a sharp attack of diarrhœa, which came on about a week before the end and proved intractable.

Post-mortem.—The body exhibited slight general anasarca. The brain showed signs of chronic wasting, thickened pia, and wasted convolutions. The arteries of the circle of Willis were extensively atheromatous. The left pleural cavity contained about eight ounces of clear fluid, the right was contracted by old adhesions. The pericardium contained a slight excess of fluid. The heart was enlarged, particularly the left side, and the left ventricular wall was much thickened. The aorta presented numerous atheromatous patches. The liver was of average size and consistence, and showed to the naked eye no sign of cirrhotic change. The ileum presented scattered patches of engorgement, and the large intestines were pretty uniformly injected. There was no ulceration. The lower bowel contained a quantity of ropy mucus. An old stricture existed at the junction of the membranous and prostatic portions of the urethra. The bladder wall was much thickened, rugose, and contracted. The summits of the rugæ were covered with a thin layer of a whitish, gritty material, easily washed off with a stream of water. The ureters were dilated but not tortuous, and their walls were thickened. The left kidney was diminutive, its greatest diameter on vertical section being 7 centimetres ($2\frac{3}{4}$ inches). The pelvis was relatively dilated. It was impossible with the naked eye to distinguish between cortex and medulla, the colour being uniform, and the projection of the pyramids being absent. The substance representing cortex and medulla varied in thickness from 2 to 7 millimetres—in other words, was little over $\frac{1}{4}$ of an inch at its thickest part. It presented on section numerous pouting vessels with manifestly thickened walls. The external surface of the organ was irregularly nodulated. Under the microscope, sections exhibited in marked degree the ordinary appearances of chronic interstitial nephritis. Nevertheless, it is singular to observe that, notwithstanding the extreme degree of atrophy, even the narrowest portions showed numerous tubules and some glomeruli that differed little from the normal, and there were nowhere considerable tracts of tissue that had lost all semblance of glandular structure such as one not unfrequently sees in kidneys much less wasted.

The right kidney was also contracted, though in a far less degree than the left. It measured in vertical diameter 10·8 centimetres ($4\frac{1}{4}$ inches.) The cortex was much wasted. In colour and apparent structure, the cortex and medulla were not readily distinguishable. The pelvic fat was abundant. Section showed numerous patulous vessels with thick walls. The external surface was pretty uniformly "granular."



ADENOMA OF KIDNEY.

F Huth, Lith.r Edin.r

In this kidney a new growth existed. It projected 9 millimetres from the convex exterior border of the kidney, just below the middle of that surface. Externally it was closely covered by the capsule of the kidney, wherein, in this position, ran a great number of vessels—some encircling the base, others running over the surface of the growth. The tumour from the outside showed an expansion above the base, thus approaching to the pedunculated form.

The surface of the new growth was nodular. It was of a lighter colour than the rest of the kidney. When the capsule of the kidney was removed, which adhered closely to the tumour, the latter showed a dirty white tint.

On section the tumour was seen to project into the substance of the kidney for about the same distance as it projected beyond the surface of the organ. The accompanying plate shows the relative proportions accurately, but as the drawing was made after the specimen had been hardened, there is a slight uniform diminution in size.* The tumour was marked off from the kidney structure by a thin fibrous-looking dark coloured capsule, from which thicker bands extended into the new growth. In these dissepiments the openings of minute vessels were here and there distinguishable. On the projecting surface of the tumour, this fibrous structure seemed to become continuous with the thickened capsule of the kidney.

Examined microscopically, the right kidney presented the typical appearances of the chronic cirrhotic kidney—"granulations of Bright" separated by atrophic bands, containing proliferated connective tissue and small celled infiltration. In the granulations the uriniferous tubules had generally become considerably dilated. The glomeruli, in many cases, presented great thickening of the capsule by a concentrically arranged fibrous-looking connective tissue containing nuclei. The interior of the glomerulus often showed a granular deposit or exudation containing a few nuclei. Here and there glomeruli had undergone colloid degeneration. Many of the tubuli contorti had lost their epithelium, in others the epithelium was much degenerated, and some had undergone colloid change. The arterial walls were much thickened, all the coats being involved. Around the portion of the tumour which lay within the kidney substance, there was a zone of atrophic tissue infiltrated with small cells and containing highly degenerated tubuli and glomeruli, many of which exhibited colloid change. In this zone there were many thickened vessels and a great number of blood extravasations.

Between the kidney structure and the tumour lay a distinct band of connective tissue, thicker in some parts than in others, but nowhere interrupted. It consisted of wavy fibres with scattered elongated oat or rod-

* The plate fairly represents the naked-eye appearances of the kidney and tumour, but the lumpy and projecting aspect given to the section of tumour and to the pelvic fat is incorrect.

shaped nuclei. This proper capsule of the tumour sent out bands which were gradually lost in the connective tissue of the degenerated kidney substance, and from this capsule trabeculæ passed into the tumour. These trabeculæ broke up rapidly into very fine bands, enclosing alveoli of pretty uniform size. The larger trabeculæ contained numerous large thin-walled vessels and many vascular dilatations, resembling, as Sabourin says, the sinuses of a cavernous angioma. The smaller trabeculæ consisted of connective tissue of great delicacy provided with few nuclei, and contained vessels which seemed to be destitute of a proper wall as well as sinuses similar to those described. The walls of the alveoli were of extreme tenuity, and I failed to make out anywhere a membrana propria like that of the uriniferous tubules. Sections of the tumour, which had been hardened in Müller's fluid, having been stained and mounted in glycerine, revealed, though imperfectly, the condition above described and little else. The inter-alveolar structure was obscured by an enormous accumulation of highly refractive fat globules and fat crystals. Treatment with ether, or absolute alcohol and clove oil, removed most of the fat, and enabled one to recognise the structure of the preparations more perfectly. One then found that the alveoli were lined with large epithelial cells, mostly of the cylindrical type, containing a faintly staining protoplasm indistinctly granular, and towards the base of the cell a nucleus which stained well and sometimes presented a distinct nucleolus. Some of the alveoli strongly resembled uriniferous tubules, presenting in long section a distinct lumen bordered on each side by a row of cylindrical cells, and occasionally one got such a tube in cross section with a lumen surrounded by a circle of cells. In other places the structure was less distinct, and the cells seemed to fill up the alveoli, leaving no lumen. Some of the alveoli contained several layers of cells, and in these the form commonly approached that of cubical epithelium, especially in the layers remote from the alveolar wall. In many alveoli there was a broadening at either end and a narrowing between, which appeared to be caused by the tube being bent upon itself, and recalled the appearance familiar in the dilated tubuli contorti of a Bright's granulation. Very frequently the alveoli which bordered the capsule of the growth or one of the larger trabeculæ, presented on section a fusiform shape, suggesting that a tube forming a segment of a large circle had been cut tangentially. Towards the centre of the lobules of the growth the structure became more confused, the alveoli looked less regular, the cells were smaller and more irregular in outline, and seemed more tightly packed. Throughout the alveolar mass there were numerous hæmorrhages. In some places blood corpuscles seemed to have found their way between the rows of cells into the lumen of a tube, and were contained within a double row of cells which still retained the appearance of epithelial cells. In others the circumjacent structures had been torn up by hæmorrhages. Very often among the alveoli, and not apparently

connected with the vessel-bearing trabeculæ, there were relatively large and densely packed masses of blood corpuscles surrounded by a single row of very delicate, flat, nucleated cells, and without any other wall. Throughout were numerous cavities which had contained blood, and to which a few blood corpuscles still adhered—some were mere holes surrounded by broken down epithelial cells, others were cavities lined as above described. I did not find any non-hæmorrhagic cysts, apparently derived from a dilatation of the alveoli, and comparable to the cysts in interstitial nephritis, such as have been described by Sabourin.

The sections exhibited under the microscopes show the various appearances described respectively in the left and right kidney, and in the different portions of the tumour.

As to the exact nature of tumours of the kidney in the adult of the character above described there has been some difference of opinion. Waldeyer, to whom Sabourin gives the credit of being the first to describe the condition, regarded it (Virchow's Archiv., B. 41. Ueber die Entwicklung der Carcinome) as being a variety of carcinoma which has undergone a sort of arrest of development. Two years later Klebs, in an early edition of his Handbook of Pathological Anatomy, recognised these growths under the names of adeno-carcinomata and adenomata of the kidney. The most exhaustive of the earlier works is that of Sturm (Ueber das Adenom der Niere, u.s.w. Archiv. der Heilkunde, 1875). Sturm held that these tumours, which he called adenomata, arose through a proliferation of the epithelium of the convoluted tubules. His descriptions are minute and accurate.

Later, Sabourin, of Paris, published a series of exceedingly able monographs on this subject, of which the first appeared in 1882.[a] He has collected a large number of cases, and his descriptions leave nothing unsaid. He tells us that these tumours are generally small, sometimes very small, yet at times attaining the size of a hazelnut, walnut, or even hen's egg. They are usually situated in the cortex, immediately under the capsule which extends over them. Mostly they are single and confined to one kidney, but they may occur in both, and "in certain cases, indeed, the surfaces of the cirrhotic

[a] Contribution à l'étude de la cirrhose rénale. Étude sur quelques variétés de tumeurs du rein. Archiv. de Physiologie. T. IX. 1882.

Sur quelques cas de cirrhose rénale avec adénomes multiples. Revue de Médécine. T. IV. 1884.

Les adénomes hæmorrhagiques du rein. *Ibid.*

Adénome volumineux du rein ayant donné lieu à la production de nodules secondaires dans le poumon. Sabourin et Oettinger. Rev. de Médécine. T. V. 1885.

kidneys are so to say sprinkled all over with them." Sabourin considers that the renal adenomata are "lesions of which the history ought not to be separated from that of cirrhosis of the kidney," that they are, in fact, an accident of renal cirrhosis. In all recorded cases they appear to have been associated with that condition. Sabourin holds with Sturm that adenomata arises through a proliferation of the epithelium of the tubuli contorti. He divides them into two classes—(1) tumours having epithelial cells of the cylindrical type, and (2) having cells of the cubical type. These are stated by Orth to correspond to the two divisions of renal adenomata made by Weichselbaum and Greenish (Wiener Med. Jahrb., 1883)—namely, alveolar and papillary. W. and G. believe that the alveolar variety arises in the convoluted tubules, and the papillary in the collecting tubules. The cubical-celled variety has a tendency to form, in the interior of wide cavities lined with cubical epithelium, elevations of a lamelliform or papillary character, sometimes branching out into arborescent forms of a highly compound nature.

Sabourin, however, believes that both the cylindrical and the cubical-celled arise from the convoluted tubes, and he thinks that the difference between them results from the fact that the former originate where the epithelium is still cylindrical, and the latter where degeneration has advanced further, and the epithelium has become cubical. The first variety begins, says Sabourin, in the comparatively healthy epithelium in the midst of a granulation of Bright, and it tends to limit itself and become encysted by rapidly invading the entire granulation, and being arrested by the contracting connective tissue which bounds the granulation. On the other hand, the cubical-celled variety originates amidst the fibrous portions of the contracted kidney where the degenerated epithelium has assumed the cubical form. It is often imperfectly encapsuled. With regard to the formation of the alveoli, Sabourin believes that the new growth begins in either form by proliferation of the epithelial cells covering connective tissue lamelli protruding into the cavity of a dilated tubule. These lamellæ branch again and again, and eventually the twigs become united at their various extremities, the connective tissue becoming rapidly thinned out into delicate fibres, and thus the appearance of alveoli and tubules is produced. According to this view, such a tumour as that which I have described would be a growth of considerable age, while the papillary growths would be younger conditions.

Sabourin traces an analogy between renal adenomata in the two varieties which he describes, and kindred adenomatous degenerations in the liver. The cylindrical-celled renal adenomata are of the same nature as the growths called *hepatic polyadenomata* by Kelsch and Kiener (Archives de Physiologie, 1876); the cubical-celled correspond to the *biliary polyadenomata* of the same authors. The analogy is obvious, but it would lead us too far afield to consider it in detail. Sabourin argues that his cases constitute a special class of new growths in the kidney, because they coincide with cirrhosis of the kidney, and result from a quite local process, and appear to have a constant tendency to become encysted.

Grawitz, in an article on "The So-called Lipoma of the Kidney," in the ninety-third vol. of Virchow's Archiv., 1883, maintains that while the growths showing branched lamelliform papillæ may originate from the epithelium of the uriniferous tubules, the tubular (alveolar) growths, such as the one which I describe, have entirely a different origin. He believes that they arise from the proliferation of embryonic fragments of displaced adrenal tissue. It is well known that accessory adrenals are common, and that fragments of displaced adrenal tissue are occasionally attached to the kidney. Orth points out, indeed, that such fragments may be found anywhere between the supra-renal capsules and the generative glands, and seeks a reason for this in the close proximity of the two organs before the descent of the latter (Lehrbuch der speciellen pathologischen Anatomie, B. II., s. 3.) These fragments consist almost exclusively of cortical supra-renal substance, and always exhibit the characteristic loading with fat. Now Grawitz believes that in an early stage of the development of the kidney, fragments of adrenal tissue, transported from their normal position, come into contact with the kidney, and lie between two renculi. The latter developing close in the aberrant growth, while the common capsule of the kidney grows over it. Thus are accounted for the fibrous covering of the tumour, its adenoid structure, and the fatty degeneration which it shows. As a matter of fact, it seems that Grawitz chiefly bases his views on this fatty change. This appears rather whimsical unless it is made appear why this fatty degeneration should be confined to the cortical tissue of the adrenals. Grawitz also objects to Sabourin's view that the epithelial tissue of the tubuli contorti having begun to degenerate, and having become cubical, can then actively proliferate. Here the analogy of the two classes of growths in

the liver, described by Kelsch and Kiener, may, perhaps, support Sabourin, but if one adopts the view of Weichselbaum and Greenish above referred to, this difficulty does not arise.

Against Grawitz' views, and in favour of Sabourin's general interpretation of these conditions, are the following facts:—

1. Adenoma in either form in the adult, is always associated with renal cirrhosis.

2. Though the tendency is towards encystment, there is not always a capsule. In one of Sabourin's cases the capsule was absent, and though the growth was mostly alveolar, part was papillary. Here Sabourin demonstrated also a gradual transition from tubuli contorti to adenomatous tissue.

3. In some other cases recorded by Sabourin the types were mixed. In portions of the growth tubules with cylindrical epithelium occurred, in part loculi filled up with compound papillæ.

These facts are to be expected either on Sabourin's or Weichselbaum and Greenish's theory, but are unaccountable on Grawitz'.

4. Finally, the cubical-celled and papillary growths are characterised, as Sabourin's cases show, by the identical same tendency to fatty change which Grawitz claims as being characteristic of the alveolar varieties (supra-renal according to him), which he proposes to call "strumæ supra-renales lipomatodes aberratæ." [a]

On the whole, then, I believe that I am justified in calling the growth now exhibited an adenoma of the cylindrical-celled type of Sabourin or of the alveolar variety of Weichselbaum and Greenish. The appearances presented are identical with those which will be found described at greater length and with much ability in the first four cases by Sabourin in his first paper.

Two points of interest not directly arising out of my case may be referred to. The tendency to extensive hæmorrhage in these tumours is great, as might be expected from their structure. In a case described by Grawitz, an enormous hæmorrhagic cyst was formed, and extravasation may have been the immediate cause of death. The subject has received the attention of Sabourin in a paper above referred to.

There seems to be a tendency to the development of carcinoma in these growths. In Grawitz' case there was secondary infiltration of the lung, and a similar case is recorded by Sabourin and Oettinger. As a general rule, of course, they are benign.

[a] Orth, who writing in 1889, states Grawitz' views so strongly as to make them his own, admits of no doubt that the papillary growths are true adenomata.

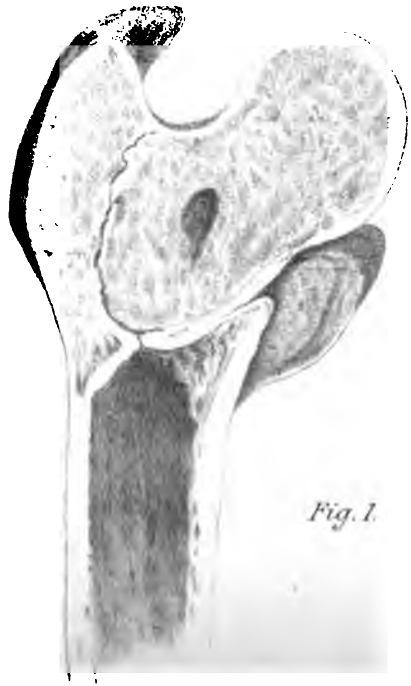


Fig. 1.

Fig. 2.

F. Huth, Lith[r] Edin[r]

D[r] E H BENNETT ON EXTRA CAPSULAR FRACTURES OF THE NECK OF THE THIGH-BONE.

ART. X.—*Exceptions to the Type of Extra-Capsular Fracture of the Neck of the Thigh Bone.*[a] By E. H. BENNETT, M.D., F.R.C.S.; Surgeon to Sir P. Dun's Hospital; Professor of Surgery, University of Dublin.

MANY writers apply the term typical to this fracture because its site in the thigh bone, its pattern, and the injury which causes it are almost constantly the same. I read in one of our newest text-books:—"Extra-capsular fracture is produced by the application of great and direct violence to the trochanter major, as from a fall laterally upon the hip."[b] Mr. Erichsen writes:—"It is the result of the application of great and direct violence upon the hip."[c] I could quote many authors to the same effect.

Force of the kind described in these passages will produce the fracture in the dead body as well as in the living; and the fracture in this respect contrasts with the intra-capsular which is most difficult, some say impossible, to produce experimentally. This constancy of cause furnishes a valuable help in the diagnosis of the varieties of fracture of the neck of the thigh bone. There are, however, exceptions to it which, though rare, I think we must not disregard.

I prefer the statement of the case given by Hamilton to the rigid rule laid down in the passages I have quoted. He says:—"Fractures without the capsule seem to be the result generally of falls or of blows received directly upon the trochanter; occasionally, also, they are produced by falls upon the feet or upon the knees."

We must be prepared to go even further, and admit that the fracture, typical in all other details, may result from muscular action, without any fall or blow.

Sir Astley Cooper's first illustration (Plate I.) of extra-capsular fracture seems to be forgotten by many more modern writers—"Mary Clements, aged eighty-three and a half years, when walking across her room, October 1st, 1820, supported by her stick, which from debility consequent upon old age she was obliged to employ, accidentally placed her stick in a hole of the floor, by which, losing her balance, and tottering to recover herself from falling, which

[a] Read before the Section of Pathology of the Royal Academy of Medicine in Ireland, Friday, Feb. 17, 1893.

[b] Fractures and Dislocations. By T. P. Pick. P. 245.

[c] Science and Art of Surgery. Vol. I., 335.

she would have done but for those near her, she found she had, as she supposed, dislocated her thigh bone. . . . She ultimately sank, without any symptom of active disease, about fifteen months from the period at which the fracture took place."[a]

A vertical section of the specimen furnishes Cooper's first illustration of extra-capsular fracture of the ordinary variety with impaction of the neck into the trochanteric region of the bone with fractures of both trochanters which have united by bone. It is clear, then, that unless we ignore the very detailed account of the accident in this case, the typical fracture can result from muscular action without fall or blow on the great trochanter.

Some years ago a great gale blew over Dublin, and was at its height in the forenoon. In Fitzwilliam-square a man was blown by a sudden gust across the roadway, and against the railings of the square, and had his leg broken. At the same time an elderly woman was blown off the uppermost step at one of the doors in Merrion-square. She was whisked off the step and, alighting on her feet on the flag-way, she saved a fall by catching the area railings. She was unable to walk, and was carried to Sir P. Dun's Hospital, where I treated her. The evidence was clear that she had not fallen on her hip, but there was not a doubt on my mind that the fracture of her thigh bone was the extra-capsular of the neck. It united in the course of time, and the permanent enlargement of the trochanteric region, which characterises this form of fracture when united, confirmed the diagnosis made in the early days of the case. I cannot give pathological proof beyond this of the nature of the fracture, for the woman lived to walk out of the hospital. I cannot determine whether the fracture was of the ordinary type, similar to that I have quoted from Cooper, or whether it might more probably agree with the variety of which I now submit three specimens to the Academy.

In the typical extra-capsular fracture, the base of the neck of the thigh bone is driven into the cancellated tissue of the bone between the trochanters to a variable depth, and the compact tissue of its inferior wall is seen in a vertical section, buried in the cancelli of the bone, and crossing the line of the compact tissue of the shaft. The vertical section, as well as the appearance of the surface of the bone, shows that secondary fracture or fractures of the bone result from the impaction of the upper fragment into the

[a] On Dislocations and Fractures of the Joints. By Sir Astley Cooper, Bart. F.R.S., &c. New Edition by Bransby Cooper, F.R.S. Page 167.

Fig. 3.

Fig. 5.

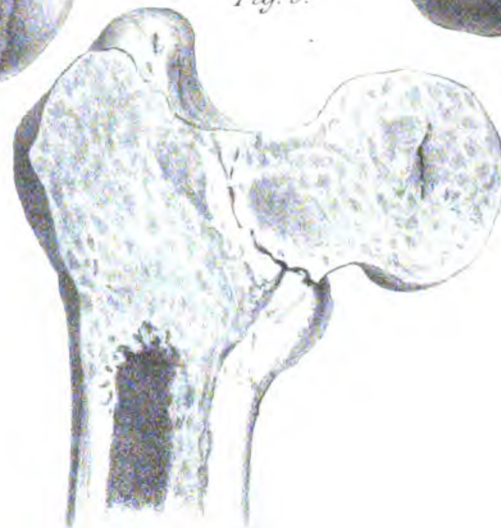


Fig. 4

F Huth, Lith.r Edin.r

Dr. E.H. BENNETT ON EXTRA CAPSULAR FRACTURES OF THE NECK OF THE THIGH-BONE

lower. In specimens which present secondary fractures developed to the least degree, the great trochanter only is broken. Professor R. W. Smith, in the summary of his chapter on these injuries, writes:—"The extra-capsular fracture is accompanied by fracture with displacement of one or both trochanters," and in his discussion of this detail he writes: "Does it ever happen that the neck of the femur is broken external to the capsule without injury to the trochanter? My own experience leads me to believe that it does not."[a] In this passage the term trochanter means great trochanter.[b] This character may, therefore, be looked on as a feature of the typical fracture as essential as the ordinary cause of the injury. The specimens I now submit break the law of the type, as in all the great trochanter has not been broken. Vertical sections expose the further fact, that in these specimens the mode of impaction is the reverse of the ordinary; the lower fragment is, to some degree, impacted into the upper. This exception in the mode of impaction has not escaped the notice of Professor R. W. Smith. He writes: "There is a very remarkable variety of the impacted fracture external to the capsule, of which I have seen but one example. In this the lower fragment penetrates a short distance into the cancellated tissue of the superior, the reverse of what generally happens." An example of this singular form of impacted fracture has been delineated by Mr. King (Plate II.). Its occurrence must depend upon the direction in which the force which broke the bone was applied, but unfortunately I am not in possession of the history of the specimen represented in the preceding woodcuts.[c] I was able to identify these woodcuts as being taken from a half section contained in the museum of Steevens' Hospital, but there is no history preserved. I have seen such a specimen also in the museum of the Surgeons' Hall, Edinburgh, also without history. Mr. King's case[d] is without history bearing on the cause of the fracture. I have recently obtained from the dissecting-room a very perfect specimen of this variety of fracture (Plates III., IV., V.), and our museum contains two others. In these three the trochanter major has escaped fracture; in one the trochanter minor was fractured. In looking at this last and most perfect specimen, one cannot help being reminded of the kind of injury which I have described in the case of the woman who was blown off by the wind and lit on her

[a] A Treatise on Fractures in the vicinity of Joints. R. W. Smith. Page 111.
[b] Loc. cit., p. 16.
[c] Loc. cit., p. 35.
[d] Cyclopædia of Practical Surgery. Costello. Vol. II., p. 378.

feet. If we could fill the gap by obtaining a clinical history, combined with a pathological examination of this fracture, we might set up in it a second but very rare type of fracture of the neck of the thigh bone. Even supposing this to be obtained, however, we cannot put aside Sir Astley Cooper's case, and we must admit that the fracture of the ordinary type may occur from a cause other than great and direct violence applied to the hip.

PUERPERAL ECLAMPSIA.

DR. CHAS. GREENE contributes to the July number of the *American Journal of Obstetrics and Gynæcology* an interesting report on the eclampsia cases occurring in the Boston Lying-in Hospital for the past eight years. Thirty-six cases in all came under observation, and are tabulated in the following manner:—Antepartum convulsions, 13; interpartum convulsions, 8; post-partum convulsions, 15. The cases grouped under these divisions had a respective mortality of 46 per cent., 25 per cent., and 6½ per cent. We notice, as regards treatment, that it has been the practice of the Hospital to induce labour in all severe antepartum convulsions. In only three out of the thirteen was this not done, and of those three none of the mothers died, whereas in the remaining ten cases we find six maternal deaths—a mortality of 60 per cent. These facts are strongly confirmatory of the correctness of the views held in the Dublin School, namely—that to interfere with the normal onset of labour in eclampsia is bad practice. Parturition was terminated rapidly in all the patients in which the disease did not set in until labour had already commenced. This, we think, is a line of treatment that will commend itself to all practical men; but for its performance we would prefer the forceps to any other means, and these, in our opinion, should not be applied until the head is fixed in the brim, and the os at least three-fourths dilated. Manual dilatation of the cervix, followed by internal version, is the method which finds most favour in the Boston maternity; but as this plan is attended with much greater shock to the patient and irritation to the uterus—both leading factors in the unfavourable termination of the disease—we are sorry that Dr. Greene at least did not let us know the reasons why such a line of treatment should be preferred to any other. Amongst the drugs popular in the maternity we are surprised to see pilocarpin holding a foremost place. That it acts as a diaphoretic is without doubt, but that it also has a depressing influence on the heart, and induces a condition of œdema of the lungs, would, we had hoped, be considered by all an absolute contra-indication for its use when dealing with a disease the unfavourable end of which is so frequently ushered in by the advent of one or both of these complications.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Anæsthetics and their Administration. By FREDERIC W. HEWITT, M.A., M.D., Cantab, &c. London: Charles Griffin & Company. 1893. Pp. 357.

THE author commences his useful book by stating that his pages have been written in the hope that they may prove of service to those practitioners and students who wish to obtain information concerning the administration and effects of general anæsthetics. Dr. Hewitt adds:—"Until within the last few years systematic instruction in this branch of practice was almost unknown, and even at the present time the opportunities which a student has of making himself proficient in the use of anæsthetics are, with rare exceptions, lamentably inadequate. It thus happens," the author goes on to say, "that numerous recently qualified practitioners leave their hospitals possessing but the scantiest knowledge of the subject, and, owing to the bewildering mass of literature which exists, and to the difficulty of extracting any really practical information from it, they regard all further attempts at self-instruction as hopeless, and resort to the simplest rather than the safest plan of anæsthetising their patients."

We have carefully read over this concise manual of over 350 pages, and we consider its publication has supplied a felt and practical want; for we believe the great advance of operative surgery in the present day could only have been reached with the aid of anæsthetics, by whose beneficent effects the patient calmly and securely sinks into the mysterious sleep of insensibility, trusting himself entirely to the goodness of his Maker and to the skilful hands of the operator.

The book before us is divided into four parts. Part I. treats of preliminary considerations such as the properties and impurities of the chief agents used for producing general anæsthesia,

also regarding the general condition of the patient, such as sex, age, temperament, habits of life, condition of respiratory, circulatory, and nervous systems. Part II. refers mainly to the selection of the anæsthetic. Part III. refers to the management and treatment of the difficulties, accidents, and dangers of general anæsthesia. Part IV. refers to the condition of the patient after the administration of the anæsthetic.

The duties and responsibilities of the anæsthetist, we consider, are quite as important as those of the operator, and we have heard from others, and have felt ourselves, that the result of the anæsthetic causes greater anxiety than the performance of the operation itself. The hap-hazard way in which some residents, house surgeons, and general practitioners administer anæsthetics is simply appalling. The performance looks simple enough, and all will undertake the responsibility, little dreaming of the risk they run in administering a remedy of the properties and effects of which they are probably totally ignorant. The sad mishaps of which we read so constantly in the different medical journals could, or might be, traced to downright ignorance or carelessness on the part of the administrator. The time, we think, has come when no one should be permitted to administer any anæsthetic until he has received special training, and, in this most important branch of therapeutics, we think all medical men should pass an examination in the subject before being appointed anæsthetist to any institution, and should have by heart all the information so practically detailed in Dr. Hewitt's book.

If we ask which is the safest anæsthetic we meet with some conflict of opinion among the different authorities. We are nevertheless strongly of the opinion that ether is the safest anæsthetic known. Morgan and Ormsby of Dublin have indisputably proved by statistics, which cannot be gainsaid, that ether is eight times safer than chloroform, and in fact the safest anæsthetic in use. At page 63, Dr. Hewitt mentions that Mr. Jonathan Hutchinson, in a very forcible article on the safety of ether, says—"I speak from a tolerably extensive observation, both of my own facts and those of others, when I say again what I have often said before, that I think that we ought to have a clear canon in full force on this most important subject. I have not the slightest misgivings in my belief *that the restrictions of chloroform would save many lives every year.* The canon I

would venture to suggest is this, *never give chloroform alone in the first instance, let it be either preceded by ether, or in mixture with it.*" The italics are Mr. Hutchinson's.

Mr. Pridgin Teale, of Leeds, "stated that he felt very strongly that ether ought to be the anæsthetic taken up by hospitals and schools, and that they ought to be turned out from these institutions able to give ether, and then they would have at hand an agent which was perfectly safe." Mr. Bailey and Mr. Woodhouse-Braine, who have for a great many years devoted themselves exclusively to the administration of anæsthetics, and who have used both ether and chloroform in some thousands of cases, have no hesitation whatever in their preference for ether.

Dr. Hewitt himself is just as emphatic when he states, "My own experience with the two great anæsthetics, ether and chloroform, has led me to regard the former as the most suitable agent for general surgical work; and I venture to assert that unless strongly contra-indicated by the condition of the patient, or the nature of the operation, ether should invariably be employed. I would go even further than this, and urge that when any doubt exists as to the suitability of ether this anæsthetic should be tried, and only abandoned in the event of its being badly borne by the patient. Persons regarded as unsatisfactory subjects for ether may often be successfully etherised if the agent be administered in the proper manner."

Morgan and Ormsby, of Dublin, by their persistent warnings and writings in the journals, advocating the use of ether as a safe anæsthetic, have no doubt gone a long way to reintroduce it into surgical practice. Morgan wrote strongly on the subject, and Ormsby, for the credit of the Irish capital, followed up the matter with energy and determination, and the inhaler which he invented is undoubtedly the most simple and useful in the market. University College Hospital, London, was the institution in which Mr. Ormsby first demonstrated the use of his inhaler on cases of Mr. Christopher Heath's, in the presence of Mr. Mayer of the firm of Mayer & Metzler, who afterwards designed the small Clover's Inhaler, which possesses the Indiarubber bag of Ormsby's, but which is, in our opinion, more complicated and less portable than the original model mentioned, and which it so very strongly resembles.

All interested in the subject of anæsthetics should at once

procure Dr. Hewitt's book, being the bes treatise on the subject we have yet read. House surgeons and administrators of anæsthetics will find it a most useful and practical guide.

The Hygiene Diseases and Mortality of Occupations. By J. F. Arlidge, M.D., &c. London: Percival & Co. 1892.

We regret that time and space have so limited our work during the past few months that we have been unable to notice Dr. Arlidge's excellent book on the relation of diseases to occupations. The work is so complete and comprehensive that an attempt to criticise fairly or even praise, as deserved, the manner in which the author has dealt with the many and diverse subjects which he has discussed would end only in failure. We can most strongly recommend Dr. Arlidge's work as the best ever written on this very difficult subject, which, as the author truly says in his preface, "few British physicians had studied," and "no treatise had been written upon for a long series of years." One of the principal obstacles which a writer has to encounter in arranging a work of this sort is the difficulty of arriving at anything like an intelligible and at the same time comprehensive classification. Dr. Arlidge has overcome this difficulty as far as such is possible—for to get rid of all imperfections is impossible. Dr. Arlidge, after some introductory remarks, deals with the "Conditions and Circumstances of Labour" from almost every conceivable point of view; then, with the statistics connected with this branch of the subject, pointing out the many fallacies connected therewith. The author then proceeds with his detailed classification of occupations and discusses the diseases incident to each. We must refer our readers to the work itself for information on this subject, which, as we have already observed, cannot be fairly dealt with in a notice such as this.

Sulla Origine dei Corpuscoli del Sangue. Ricerche del Dott. Vincenzo Allara. Milano: Chiesa & Guidani. 1893. Pp. 155.

S. Allara has previously published an essay on Magnetism in Animals and Plants, which first appeared in the Florentine journal *Lo Sperimentale* in February, 1881; and an inquiry into

the cause of Cretinism, which was printed in Milan last year. The present work is divided into six sections, the last summarising the conclusions at which the author has arrived upon the embryonic origin of the blood-corpuscles, white and red, in vertebrates. These conclusions are the result of much patient research. To all but students of minute physiology the third section will probably be the most interesting. Taking for a text Haeckel's dictum that "ontogeny is a summary recapitulation of phylogeny, phylogeny is the efficient cause of ontogeny," S. Allara devotes sixty-two pages to a sketch of the "development of organisms in the zoological series." He traces the correspondence between the successive stages of the vertebrate embryo and the ascending scale of animal organisms, starting from the monera, the product, he assumes, of spontaneous generation. He distinguishes five primordial evolutionary stages of animal life—the monerula, the amœba, the synamœba, the planæa, and the gastræa, from the last of which the existing animal kingdom has been developed, through two ramifications, the zoophytes and the worms. "Man," he says, "and every other species, in their earliest forms, traverse the stages through which the series of organisms has passed to gain the gradation to which its development can attain. Man in the womb has been successively a *monerula*, a *citula*, a *morula*, a *blastula*, a *metagastrula*; the citula corresponds to an amœba, the morula to a synamœba, the blastula to a planula, the gastrula to a gastrea. In succeeding stages the embryo corresponds to a cordonius, to an acraniote, like the amphioxus; to a cyclostomoid, to an ichthyoid, to an amniote with a cloaca, like the monotremata, and, finally, to a placental mammal."

Text-book of Ophthalmology. By Dr. ERNEST FUCHS. Translated from Second German Edition by A. DUANE, M.D., New York. London: H. & K. Lewis.

DR. DUANE is to be congratulated upon the excellent translation he has made of Professor Fuchs' text-book. It is no easy task to render into English a German work of nearly 800 octavo pages, and Dr. Duane has accomplished it so successfully that, in spite of occasional German idioms and American spelling, he has produced a readable book. Professor Fuchs' text-book is well worthy of a translation, as it is, without exception, the best work of the

kind which has appeared for many years in Germany. It is not an encyclopædia like the Graefe-Sæmisch Handbuch. It only gives the ophthalmological public a full and complete account of the doctrines which are taught by the eminent man who now occupies the chair of ophthalmology in Vienna. Criticism of a work of this kind is difficult, and it is rather a futile proceeding to write the mere panegyric which this book deserves. It may suffice to note some of the points in which Professor Fuchs' teaching differs from what is usually taught in the United Kingdom, and to call attention to his opinions upon some of the *quæstiones vexatæ* of ophthalmology.

The first of the vexed questions touched on is the cause of the light reflex on the retinal vessels. This is disposed of in a single sentence, and the theory adopted is that of Jæger, that the reflex is from the anterior wall of the blood column. It is curious that after all that has been written about this subject no mention should be made of the other theories advocated in America, England, and even Vienna itself, for the Viennese school is not at all united in its views on this point.

The clinical descriptions of the various diseases, the brief anatomical introductions to the various sections of the work, and the pathological anatomy, are all of the highest excellence, and it is only when we come into the region of theoretical speculation or practical therapeutics that we can find subject-matter for comment. It is interesting to observe, for instance, that Professor Fuchs finds in a two per cent. solution of nitrate of silver his sole and sufficient remedy for acute catarrhal conjunctivitis. When a surgeon has obtained a good remedy for any disease he should certainly stick to it, but if it were only to relieve the monotony of out-patient practice we should like to have another remedy to use occasionally. In the chronic forms of the disease he gives us a greater choice.

In the section upon trachomatous conjunctivitis we notice a gross error in translation. Professor Fuchs is made to say that in the papillary form "there is now no thickening of the conjunctiva, the subjacent meibomian glands being visible through the latter." What is to be found in the German edition is that the thickening of the conjunctiva no longer permits the subjacent meibomian glands to be perceived through it! We cannot believe that mistranslations like the above are at all frequent in Dr. Duane's

work; for, although in every case when the meaning seemed at all doubtful to us we have compared the translation with the second German edition, the above paragraph is the only one in which we lighted upon an error of any importance.

Professor Fuchs' opinion is that there is but one kind of trachoma, which, however, appears under various forms; and that the ultimate origin of the disease is probably to be found in the secretion of genitals affected with gonorrhœa. But the relations of the different forms of blennorrhœa, trachoma, and follicular conjunctivitis to each other will finally be determined by bacteriology—at present the only microbe satisfactorily determined is the gonococcus of acute blennorrhœa. Professor Fuchs, contrary to many—perhaps most—authorities, condemns all the operative or mechanical methods of treating trachoma, and relies upon caustics and astringents, and in cases of dense pannus jequirity.

In treating of keratoconus it is stated that the cause of the thinning of the central portion of the cornea is unknown, a statement which is hardly justifiable since the publication of Tweedy's paper on the physical factor in conical cornea, in the Transactions of the Ophthalmological Society, Vol. XII.

It has long been known that the fluid which forms in the anterior chamber immediately after paracentesis is much more albuminous than the normal aqueous, and this has been of late accounted for by a paralytic secretion from the ciliary gland. Fuchs attributes it simply to the transudation of fluid from the vitreous.

With regard to cocaïn, its effects are explained upon the assumption that it stimulates the fibres of the sympathetic. Hence, dilatation of the palpebral fissure is produced by contraction of Müller's muscles, an hypothesis which is somewhat superfluous, as the loss of the conjunctival reflex is quite a sufficient cause of the observed retraction of the lids. In this connection it may be noted that Professor Fuchs, unlike Professor Hirschberg, admits the existence of an atropin catarrh.

Cases of traumatic iridocyclitis are stated to be more particularly dangerous to the second eye when (1) the injury occurs in the ciliary region, and (2) a foreign body remains in the globe. This statement is now an ophthalmological commonplace, but its precise value and validity are alike disputable. Every case of traumatic iridocyclitis, no matter where the seat of injury may

be, and no matter whether there is a foreign body present or not, is fraught with peril for the second eye, and "particularly dangerous." It is the traumatic iridocyclitis that is particularly dangerous, not the situation of the wound or the presence of a foreign body. We observe that Professor Fuchs keeps an open mind upon the question of the method of transmission of sympathetic inflammation, waiting for further information in corroboration or the reverse of Deutschmann's views.

In the section upon pterygium we have the results of Professor Fuchs' original work upon this affection, which has been published in von Graefe's archives.

We observe that in Professor Fuchs' practice anterior synechia always results from Sæmisch's operation for hypopyon ulcer. This has not been our experience.

The increased depth of the anterior chamber which is so frequently observed in diffused interstitial keratitis is referred by Professor Fuchs to an increased secretion of aqueous. Is it not more probably due to the abnormal aqueous being unable to make its way freely through the spaces of Fontana, an hypothesis which would also account for the increase of tension in the disease, which Prof. Fuchs explains by the simultaneous existence of chorioiditis anterior? He states that increased tension is rare in diffused interstitial keratitis. In Ireland it is certainly not uncommon.

Glaucoma is treated of with admirable lucidity; but we notice an error in translation at page 349, fourth paragraph—the words "former" and "latter" should be transposed.

In the chapter on diseases of the lens it is stated that lamellar cataracts have been anatomically examined by Deutschmann, Beselin, Lawford, and Schirmer; but the reader would not be able to make out from Professor Fuchs' book that the principal outcome of these later observations is that the pathological changes are found all through the nucleus of the lens, and are not at all restricted to the layers in which the macroscopic opacity lies.

Professor Fuchs seems to have an open mind with regard to the theory of colour perception as well as other modern theories. Both theories—that of Young and Helmholtz and that of Hering—are given with impartial justice.

We suppose it is by a slip of the pen that the tarsus is stated to be made of fibro-cartilage, for all modern authorities deny that cartilage in any form enters into its composition.

In treating stricture of the nasal duct Professor Fuchs slits the lower and not the upper canaliculus, a proceeding which we consider unsound on theoretical grounds, and also condemned by the results of experience. Either canaliculus does equally well for the passage of the probe, but the patient will feel the loss of the lower one much more to his future discomfort than that of the upper.

Another point on which, indeed, Professor Fuchs will not get many ophthalmologists to agree with him is the postponement of operations for convergent strabismus until the patients are ten years old, because some cases get cured of themselves. These cases are far too rare to justify such a general rule.

We think, too, it is an error to attribute von Graefe's symptom in exophthalmic goître to a lesion of the sympathetic. If so, it must be an irritative lesion. All the other symptoms can be accounted for by paralytic lesions, and why not this one?

The translator has given the classical derivations of ophthalmological terms in footnotes. To one of these we would take exception, or, rather, to two—hemeralopia and nyctalopia. The former is said to be derived from *ἡμέρα*, day, and *ὤψ*, sight, but properly, the eye; the latter from *νύξ*, night, and *ὤψ*, sight. This may possibly be so, but such a derivation takes no account of the *l*—the *l* which is thus inserted needlessly in both words. The correct derivation is almost certainly from *ἀλαωπός*, blind, from *ἀλαός*, blind, and *ὤψ*, the eye. Professor Fuchs uses the term hemeralopia to signify night blindness, and nyctalopia, day blindness, therein following the common custom of European textbooks. It is most probable that the earliest authorities used these terms in the exact contrary senses, and rightly, as we believe most readers of Mr. Tweedy's papers in the Ophthalmic Hospital Reports will admit.

To conclude with a few remarks on the chapter on operations. Professor Fuchs ordinary asepticism consists in disinfecting the operator's hands with four per cent. solution of carbolic acid, or corrosive sublimate 1 in 2,000, and the instruments with boiling distilled water, or with carbolic acid. The conjunctival sac is washed out with sublimate solution 1 in 4,000. Of course the more dangerous cases of lacrymal or conjunctival disease receive a more energetic treatment. After the intraocular operations both eyes are bandaged, and the patient kept supine in bed for several days. Several methods of cataract extraction are well and

clearly described, but in De Wecker's corneal flap extraction the all-important point of gauging the size of the incision by the height of the flap is omitted.

Professor Fuchs' general conclusion as to cataract extraction is that the corneal-flap extraction without iridectomy gives, under favourable circumstances, the most perfect result; but it is not adapted to all cases, nor does it give the same certainty of success as the scleral-flap extraction with iridectomy. One section of this last chapter we do not regard as quite up to date, viz.—that on trichiasis and entropium operations. Professor Fuchs mentions, but apparently does not practise, the transplantation of mucous flaps for the cure of these deformities; as soon as he does he will give up the old Arlt Jaesche transplantation which still seems to flourish in Vienna.

A Handbook of Obstetric and Gynæcological Nursing. By the late FLEETWOOD CHURCHILL, M.D. Revised and greatly enlarged by THOMAS MORE MADDEN, M.D., F.R.C.S. Ed.; Gynæcologist, Mater Misericordiæ Hospital, &c.; formerly Master, National Lying-in Hospital; Assistant Master, Rotunda Hospital; Vice-President, British Gynæcological Society, &c. Dublin: Fannin & Co. 1893. Small 8vo, pp. 207.

THERE is, to say the least of it, plenty of room for a good and practical manual in obstetric nursing, and it is, therefore, a move in the right direction when such an admitted authority as Dr. More Madden throws his energies into the perfecting of such a work.

Needless to say, under the circumstances, the book is clearly and concisely written, interesting all through, it affords much information of the greatest practical advantage to the class of readers for whom it is intended.

The work is published by Messrs. Fannin & Co., Dublin, in a very compact form. It consists of 259 obstetric and 49 gynæcological pages. The woodcuts on the whole are good, though some of them might easily be dispensed with, without in anyway detracting from the efficiency of the book.

We regret to find that no mention is made of abdominal palpation as a means of diagnosticating the position and presentation of the fœtus. This we look upon as a very grave omission, believing, as we do, that the method is easily learned, free from harmful

results, and is infinitely more accurate in its diagnostic results than that which is attained by any other means.

In the chapter on natural labour it is not laid down that the infant's mouth should be cleared of mucus and wiped before it has had time to breathe. Minute directions are given as to the most efficient methods for removing mucus from the bronchial tubes of the infant; but it undoubtedly is much preferable to prevent mucus getting into the air-passages than to subsequently employ means to rectify a condition which ought never to have occurred.

We cannot find that the nurse is recommended to wipe the infant's eyes, or use any other precautionary measure to guard the organs from an attack of infective ophthalmia. This latter disease does not apparently receive any mention throughout the book.

The directions as to proper disinfection of hands and instruments before they are permitted to come into contact with the patient, are very imperfectly given, and this, we think, is one of the most unfortunate mistakes of the work. Undoubtedly personal cleanliness is insisted upon in several places, but the minute details necessary to ensure true asepsis are for the most part left to the imagination.

The attendant's responsibility in the prevention of acute sepsis is not, we fear, sufficiently dwelt upon.

Dr. Madden believes this disease may arise from a variety of causes, many of them beyond the control of the accoucheur—a number of these are stated, such as scarlet fever and a vitiated atmosphere—so that the midwife who reads the book will be at no loss to account for a source of infection other than her own want of cleanliness.

The methods advised to be employed by the beginner in the passage of a catheter are good, but there is no warning to thoroughly disinfect the parts before the instrument is used. Gum-elastic and celluloid catheters are unfortunately recommended in preference to the more aseptic glass and metal instruments.

Dr. Madden holds that a rigor may result from "the coming of the milk," and adds, that it need occasion no alarm when arising from this cause. We hoped that the doctrine of "milk fever" had long since been discarded, and regret that a man of Dr. Madden's eminence should arise to lend the weight of his authority to such an exploded fable.

Let truth assert itself at any price, and let us once and for all face the fact that we have to do with some form of septic infection

when a rigor occurs anytime after twelve hours from the completion of labour.

In several parts of the work sponges are recommended, not only to cleanse the external genitals, but even to plug the vagina in cases of post-partum hæmorrhage; they are, however, rightly condemned on page 162, but too late in the book to make the correction of any great value.

We do not wish to proceed any further in the criticism of a work that does not aim at anything beyond a nurse's help. The manual is probably as free from defects as any other work of its kind, and it is in no unfriendly spirit we point out what we consider its deficiencies to be.

In conclusion, we would strongly recommend every midwife to become possessed of the book, for, containing as it does the ripe experience of such eminent specialists as Dr. More Madden and the late Dr. Churchill, it cannot fail to convey a fund of valuable information to those who study it.

RECENT WORKS ON LEPROSY.

1. *Report of the Leprosy Commission in India*, 1890-91. Calcutta. 1893. Pp. 456.

2. *Leprosy in New South Wales.* (*Report for* 1892 *on Administration of the Leprosy Act; and certain Information respecting the Prevalence of the Disease in the Australian Colonies.*) Ordered by the Legislative Assembly to be printed, 23rd March, 1893.

1. This Report has been so completely summarised and so thoroughly discussed by our weekly contemporaries, that we shall do no more than express our cordial concurrence with the Commissioners in the conclusions at which they have arrived, after exhaustive inquiry on the spot. It was not to be expected that the Committee at home would accept with equanimity conclusions as to contagiousness of leprosy and segregation of lepers, which, if accepted, could not fail to make the panic, out of which Committee and Commission grew, seem *tant soit peu* ridiculous. Accordingly, we find the Committee expressing their disagreement with the opinion "that the extent to which leprosy is propagated by contagion and inoculation is exceedingly small," and refuse to accept the Commissioners' strongly and repeatedly expressed opinion that segregation of lepers is unnecessary, and in India impracticable. On these

two points it is significant that the medical members of the Executive Committee agree with the Commissioners. We cannot but think that much of the popular panic about the spread of leprosy from lepers, and of the demand for segregation has sprung from a confused notion that *elephantiasis græcorum*, the leprosy with which we are now concerned, and the Levitical "leprosy" are identical. It is only necessary to read the Levitical description of the symptoms to see that there is absolutely nothing in common between the two diseases. In the Jewish case, moreover, segregation ceased to be imposed when the leprosy was complete. The patient who was leprous from head to foot was "clean," and could go where he would.*

It is impossible to speak too highly of the ability and industry displayed in this Report. The ingenuity with which the names of its authors have been concealed by the Executive Committee is most remarkable. The object was, no doubt, to compel those who are anxious to honour those to whom honour is due to read through the entire volume for their own good. We shall partially lift the veil by indicating page 390 as the place where the secret is buried.

2. We are indebted to the kindness of Dr. J. A. Thompson, Chief Medical Inspector under the Leprosy Act, for a copy of this Parliamentary paper, to which are appended his detailed notes of thirty-four cases. These include all patients of European descent, thirteen in number, admitted into the Lazaret since its establishment (1888), and twenty-one coloured lepers who survived into 1892. On the 31st December of that year thirty lepers were inmates of the institution, two natives of New South Wales, of British descent, and one Chinaman had died during the year. There is accommodation for 48 patients—40 males and 8 females. The Board of Health consider this sufficient for the colony. "It is hoped that notification and segregation of lepers will be the means of eradicating the disease from the colony; for in view of the steady decline of Chinese immigration, of the greater attention which is now being paid to the sanitary inspection of Chinese camps and quarters, and of the strict segregation of all known cases, the Board has reason to hope that New South Wales may yet be saved from having leprosy a disease permanently abiding in the colony; and the Board trusts that by the health authorities

* Gehazi, it will be remembered, after becoming "a leper as white as snow," appears in a prominent position in court.

of other colonies rigidly enforcing similar sanitary regulations, Australia may ultimately be freed from the disease."

So much for New South Wales. South Australia empowers (since 1884) its Central Board of Health to isolate lepers. In South Australia proper no cases are known; "but there are three or four cases (all Chinese) in the Northern Territory who are isolated on separate quarantine grounds." Western Australia "reports that there has been no case of leprosy since that of the Chinaman, Ah Lee, reported in 1890, and that this man is no longer in the colony." The Central Board of Health of Tasmania "reports that, so far as is known, the colony is entirely free from the disease, and therefore there has been no legislation on the subject."

In New Zealand no special Acts are in force. In 1890 a Report by Dr. Alfred Ginders was published as a Parliamentary paper, in which six cases among natives—all that had come under his notice—are detailed. The evidence collected by him goes to show that the disease was formerly more prevalent than it is now—in other words, that it is dying out, without segregation. One old native quaintly attributes the diminution of the disease—which, he said, he had known to carry off whole villages!—to the dying out of all the old men who knew how to communicate it. "My father," he deposed, "was one of the worst of them. He destroyed numbers by giving them *ngerengere*. His plan was to make his enemy a present of a mat or some other article of clothing that had been worn by a *ngerengere*, and the disease was sure to follow." We quote two of Dr. Ginders' conclusions from his study of the disease in New Zealand:—"7. That the immunity from the disease enjoyed by women who have lived for years with leprous men, and *vice versâ*, makes it difficult to believe that it is infectious or contagious in the ordinary sense. 8. That if the proliferation of a special microbe in the blood and tissues is essential to the disease, a very special environment would appear to be necessary to secure an effective invasion."

On Sledge and Horseback to Outcast Siberian Lepers. Illustrated from Photographs and Drawings. By KATE MARSDEN. London: The *Record Press*, Limited. 1892.

This interesting record of Miss Marsden's crusade "on behalf of helpless, hopeless, and homeless outcasts," is tastefully printed,

graphically illustrated, and eminently readable. The volume is dedicated to "Her Most Gracious and Imperial Majesty the Queen, the most queenly woman and the most womanly Queen." The text is divided into fourteen chapters; there is a rather lengthy appendix, a map of the route taken by the authoress in her arduous pilgrimage, and twenty-six illustrations. The book is prefaced by two letters which form initial features that will probably prove attractive to every reader: the first is from Her Majesty Queen Victoria of England, the second from Her Imperial Majesty the Empress of Russia. Miss Marsden displayed true diplomatic wisdom in providing herself at the start with a letter from the Empress of Russia, recommending her to the protection and guidance of the leading officials of the various provinces through which she was obliged to pass on her way to Yakutsk. When it is remembered that the distance of this city from St. Petersburg is no less than 5,000 miles, and that the postal arrangements are so very unsatisfactory that the transmission of a letter and reply between the two places occupies many months, some faint idea may be grasped of the energy and pluck which must be attributed to the author of this volume for conceiving and carrying out the journey which it records. Without the special patronage which the Russian Empress granted at the outset, and the tact and coolness of judgment displayed by Miss Marsden throughout the whole period of her journey, there can be no doubt that the carrying out of her self-imposed mission would have proved quite impracticable. No less than 2,000 miles of this remarkable journey were traversed on horseback, and in the midst of physical dangers of a nature that constantly required the exercise of the coolest courage and the best diplomatic judgment, as well as enduring energy and an enthusiastic determination to persevere in the fulfilment of her allotted task.

Miss Marsden was further fortified in the course of her duties: mentally, by her deep religious conviction; physically, by her practice as a staunch total abstainer. Indeed, she goes so far as to attribute the preservation of her life during her prolonged pilgrimage in cold and fatigue to her teetotalism and her Jaegar clothing.

The terrible realism of the descriptions given by the writer of this volume, of the sufferings and surroundings of the unhappy lepers whom she had gone so far to visit, and whose condition she has already done so much to alleviate, is perfectly heartrending in

its vividness. "The poor lepers are so looked down upon as the very dross of the community, that even those wishing to befriend them have fallen into the way of thinking that the worst is good enough for them." "When once a man is known to be tainted with leprosy he is thrust out from his people, and driven away, as if he were some noxious animal, into a lonely spot in the forest, or on the marshes, where he is doomed to a living death. . . . . The only shelter he can find is some filthy little *yourta* (hut), which may have been tainted by another leper, who now, perhaps, is buried near the threshold. His first duty is to make a cross, which he is bound to place outside, as a warning to any one who may happen to pass to shun him."

We feel confident that Miss Marsden's graphic narrative will arouse the sympathies of all philanthropic readers. Her high-minded efforts in the direction of the alleviation of the miseries of the lepers of this winter Siberian region deserve all praise, and has already borne good fruit which will assuredly continue to increase.

If we felt inclined, as we do not, to criticise anything in this narrative of a very meritorious work, it would be that the author sometimes displays certain weaknesses in the direction of prejudice or fancy. For instance, on page 92, she informs her readers that at the close of her interview with the bishop of Yakutsk: "As I was leaving he came forward and blessed me. Perhaps some friends may think it wrong of me (a Protestant) to receive the blessings of a dignitary of the Greek Church." We confess that we think the adoption of this apologetic tone quite unnecessary. On page 90, in her description of the climate of the same city, we are told that: "The shawl which screens the face is soon covered with a *sheet* of ice, on account of respiration; the frost also covers the eyelashes, so that it is impossible to see at all. . . . . It is not light till ten or half-past, and is dark about two; and this state of things continues for nearly *eight months* out of the year." [The italics are ours.] We consider that both these statements require to be "discounted." But these are small faults in a record of genuine philanthropy and devoted self-denial.

Nuevo Concepto de la Histologia de los Centros Nerviosos. Por el DR. D. SANTIAGO RAMÓN Y CAJAL. Barcelona. 1893. Pp. 68.

DR. CAJAL has republished in pamphlet form three lectures delivered last year before the Academy of Medical Sciences of

Catalonia, which appeared in the *Revista de Ciencias Médicas de Barcelona.* His "new view of the histology of the nervous centres" is not capable of condensation into a brief notice, but it will, we believe, be found interesting to those physiologists who make a special study of the nervous system. The diagrammatic illustrations are clear and good. The cerebellum, cerebral cortex, the parts associated with the special senses of smell and sight, the ganglia, and the neuroglia are separately considered. A copious bibliography is appended, giving references to German and Italian books and papers.

Ancient Egyptian Medicine: a Bibliographical Demonstration in the Library of the Faculty of Physicians and Surgeons of Glasgow, 12th January, 1893. By JAMES FINLAYSON, M.D., Honorary Librarian to the Faculty of Physicians and Surgeons of Glasgow; Physician to the Glasgow Western Infirmary, and to the Royal Hospital for Sick Children, Glasgow. Glasgow: 1893. Pp. 55.

Herophilus and Erasistratus, &c., &c. By the same. Pp. 42.

WE are indebted to the author for copies of these two reprints—the former of which appeared in the *British Medical Journal,* the latter in the *Glasgow Medical Journal.* Egypt was the cradle of physical and mathematical, as India, of mental science; and it is impossible to read without interest the observations and the guesses at truth of men who were mummies some 35 centuries ago. The Eberspapyrus—found between the legs of a mummy in 1858—is "a kind of medical compendium or compilation which was written down, at the latest, in the year 1550 B.C., but which belongs in its separate parts to different periods of time more or less remote." It is to this document that Dr. Finlayson's lecture is chiefly devoted, and his account of it and translated extracts from Dr. Joachim's translation, are most interesting. We may mention, as a remarkable instance of the persistence of endemic disease, that an elaborate account is given in the papyrus of an affection which Dr. Joachim satisfactorily identifies with *Chlorosis Ægyptiaca,* the result of the presence of *ankylostomum duodenale* in the intestine. One-fourth of the population of modern Egypt are supposed to suffer from the same disease.

Herophilus is little more than a name to us, associated with his

torcular; and Dr. Finlayson tells us nearly all that is known about him. He is accused by Celsus and by Tertullian of vivisection *in excelsis*—of having dissected living men; and the churchman's attack upon him might have been read by a "returned empty" bishop at a Church Congress. "Herophilus, that physician, or butcher, who dissected six hundred persons in order that he might scrutinise nature; who hated man that he might gain knowledge: I know not whether he explored, clearly, all the internal parts of man," and soforth. Live material for practical anatomy seems to have been more abundant in those days than dead in the Burke-and-Hare period! A great anatomist Herophilus unquestionably was; while Erasistratus, with whom he is almost invariably bracketed, was a practical physician of renown. His diagnosis of Antiochus' disease—a passion for his young stepmother Stratonice—and his prescription of matrimony cheerfully administered by the father, the lady's husband, and followed by complete recovery, are well known. Perhaps equally interesting, and not so well known, is the fact recorded by Pliny, that the grateful father expressed his sense of relief by a fee of £25,000. Galen's animus against Erasistratus, shown by frequent "digs" at him in his writings, shows that at the end of the second century of our era his authority in medicine was potent. Galen, indeed, wrote a whole book to demolish Erasistratus' views of venesection. The latter, to Galen's disgust, preferred ligatures on the limbs to phlebotomy. Erasistratus invented the catheter, and, though he objected to excessive bleeding, to energetic purgation and to narcotism with opium, he could be heroic in other ways. He was wont to treat hepatic disease by direct applications to the liver. We thank Dr. Finlayson for these peeps into old-world medicine.

What to do in Cases of Poisoning. By W. MURRELL, M.D., F.R.C.P.; Physician to, and Lecturer on Pharmacology at, the Westminster Hospital; late Examiner in Materia Medica in the University of Edinburgh, and to the Royal College of Physicians of London. Seventh Edition. London: H. K. Lewis. 1893. Pp. 276.

A NEW edition of this work having been called for, the author has taken the opportunity of making it even more complete, and of revising the whole. Old methods of treatment have been improved, and new ones introduced. The effects of several new

poisons have been described, with the appropriate remedies. A new feature in this edition is the grouping of cases of Chronic Poisoning into a special section. In this the effects of lead, opium, alcohol, and other less important drugs are described.

We regret that we must comment adversely on one feature in this little book. On the 274th page we find the following paragraph :—"The following is a list of tabloids for hypodermic use manufactured by Messrs. Burroughs, Wellcome & Co. They may be conveniently ordered by their numbers. Those marked with an asterisk are specially useful in the treatment of cases of poisoning." Then follows a complete list of the tabloids, many of which cannot be of any use whatever in cases of poisoning. Similar tabloids equally good are made by several other makers. The whole thing looks far too like an advertisement, and, in our opinion, should not have appeared in a presumably independent work.

With this exception, we have nothing but praise for this book. It is the most practical and most handy work in existence on the subject, and it ought to be on the table of every medical man who is liable (and who is not?) to be called at a moment's notice to a case of poisoning.

POPULATION OF FRANCE.

THE *Gazette Médicale de Paris* (10th June, 1893), tabulates the numbers of births and deaths in France for the eleven years 1881–91. In 1890 deaths exceeded births by 38,446; in 1891, by 10,505. The heavy mortality of these years is attributed partly to influenza. The number of births is steadily decreasing—that for 1891 (866,377) being, absolutely and relatively, the lowest of the century, with the exception of that for 1890 (838,059). The birth-rate for the whole of France is 22·6 for 1,000 inhabitants, ranging from 13·8 in one Department to 32·8 in another. It is only half the rate prevailing in Russia.

DISEASE IN GUADALAJARA.

THE *Boletin del Consejo Superior de Salubridad* of Guadalajara, for April 14th, gives the causes of deaths in that city for March. Some of the figures are remarkable. Pneumonia is set down for 88 deaths, enteritis for 46, diarrhœa 45, variola 38; these were the most fatal diseases. Four deaths are attributed to scorpion-sting, 9 to tuberculosis, 9 to typhoid, 8 to typhus. The total was 378, in a population which seems to have been 7,000 in 1871.

PART III.

SPECIAL REPORTS.

REPORT ON PRACTICE OF MEDICINE.

By Henry T. Bewley, M.D., Univ. Dubl.; F.R.C.P.I.; Assistant Physician to the Adelaide Hospital; and Lecturer on Medical Jurisprudence in Trinity College, Dublin.

I. ON PRIMARY CHRONIC MYOCARDITIS.

Kelle gives a full account of some of those curious cases of heart-trouble in which the valves are normal, yet the organ is seriously impaired; cases in which the symptoms seem all to be connected with the heart muscle, and in which this affection of the muscle does not seem to be secondary to, or produced by, disease of any other part of the heart. The disease, therefore, must be looked upon as primary chronic myocarditis.

Every age is liable to this affection; but it is more common before the fortieth year. The factors which excite this disease are similar to those which cause endocarditis, except that rheumatic fever has not been so frequently present. The heart is usually found enlarged, both right and left sides being affected: the amount of enlargement varies greatly in different cases. The impulse can be seen and felt over an abnormally large area; the action is usually, but not always, irregular. It is remarkable how the action of the heart is influenced by mental conditions (excitement, &c.). The impulse is often too violent; the second sounds at the base are accentuated. The heart sounds are pure, or at most a little prolonged, unless the so-called "relative incompetence" of the valves causes murmurs.

Krehl's remarks on this subject are quoted. He showed that relative incompetence at the auriculo-ventricular openings can occur without any dilatation of the cavities; normally the muscle-bands in the neighbourhood of the opening, contracting with each systole, diminish the size of the opening, and enable the flaps of the valve to close it. When these bands are diseased, and are unable normally to diminish the opening, regurgitation occurs.

The peripheral arteries must be free from atheromatous disease; otherwise it is not possible to decide that the myocarditis has not been secondary to this change.

Feelings of discomfort about the heart are marked, especially in the later stages of the disease; attacks of true angina occasionally occur. In one case changes in the blood were found, resembling those occurring in pernicious anæmia. The temperature is usually normal; occasionally there is hectic fever.

After death both ventricles are always dilated and sometimes hypertrophied. The microscopic examination of the muscle-fibres shows extensive, finely granular, fatty degeneration, swelling, cloudiness, and in spots even necrosis. Numbers of round cells are seen between healthy muscle-fibres; vascular newly-formed connective tissue is seen, which in places surrounds remains of muscle-fibres and nuclei. Masses of dense fibrous tissue, containing very few cells, were also found. The arteries of the myocardium are not extensively diseased; spots of atheroma are seen in some.

As regards ætiology, most of the cases can be traced to some disease of an infective nature—typhoid, rheumatism, scarlatina, diphtheria, erysipelas, or syphilis; for those cases which appear to have come on without any cause we may assume the existence of some slight infective attack which left no traces behind it, such as tonsillitis.

With regard to diagnosis, it is of considerable importance if we find abnormal activity of the heart, which cannot be referred to peri- or endo-carditis. If the rhythm is irregular while the sounds are pure, the diagnosis is certain. As regards the differential diagnosis from atheroma of the coronary arteries, the age of the patient, and the condition of the peripheral arteries must be considered. If murmurs are present, and yet the pulmonary second sound is not accentuated, myocarditis probably accounts for the weakness of the right ventricle.

It is difficult to say what course these cases will run; some in the Leipzig Hospital soon ended fatally; others quickly improved,

but were not cured at the time of their leaving hospital.—*Centralblatt f. innere Med.*, 1893, No. 19.

In a paper on this subject, Fräntzel states that there are four forms of this disease: it may be (1) diffuse, or (2) circumscribed, and either of these may be acute or chronic.

Acute Circumscribed Myocarditis shows itself as an abscess in the wall of the heart. During life there is nothing characteristic; the disease runs a rapid course, and ends fatally. The diagnosis can never be more than a matter of probability.

Acute Diffuse Myocarditis is rare; it may be a manifestation of pyæmia and similar conditions, and appear as numerous abscesses; or it may be primary (rheumatic), and only cause a change in the colour and consistence of the heart. The latter is the more usual form, but is generally overlooked, because it is not necessarily rapidly fatal, and connection between the conditions observed during life and after death becomes obscure. The positive signs of the affection—viz., increasing weakness of the heart, slight dilatation, and progressive disturbance of the circulation—can only be proved to be due to an inflammatory condition of the heart-muscle when it is possible to exclude all other lesions which might cause the symptoms observed.

The *chronic circumscribed* form, excluding syphilitic cicatrices, is observed as a thinning of one particular spot in the heart's wall, or ventricular septum—often the seat of aneurysmal dilatation.

In *chronic diffuse myocarditis* we have an extensive infiltration of the tissue with round cells and young connective tissue; these changes are sometimes most marked under the pericardium, sometimes under the endocardium, sometimes in the papillary muscles. The left side of the heart is more often affected than the right.

The clinical symptoms of chronic diffuse myocarditis are those of uncompensated heart-failure—passive hyperæmia, œdema, hæmorrhages into various organs. In consequence of the disease of the myocardium, the tension in the arteries is lessened, the veins remain full. Sometimes the earliest symptoms are referable to the pulmonic circulation: shortness of breath on exertion, palpitation, and pain in the cardiac region. The progress of the case is downward; the usual thoracic and abdominal symptoms of heart-failure occur. Palpation and percussion of the heart often do not show any marked deviation from the normal: the sounds are pure but irregular in force and rhythm. The pulse is weak, and easily compressible.—*Centralblatt f. klin. Med.*, 1893, No. 16.

II. THE EFFECT OF LARGE DOSES OF BROMIDES IN THE TREATMENT OF EPILEPSY.

Féré gives an account of 20 cases of severe epilepsy which were treated with large doses of potassium and strontium bromide. The cases had not been benefited by the administration of moderate doses of bromides. Féré has shown that very large doses are not only harmless, but are also of much use in relieving the disease. He states that he has under his care twenty patients who take daily from 260 to 320 grains of bromide of potassium or strontium. Most of the cases had been under observation for years; the average frequency of the attacks was ascertained before the treatment was begun; then moderate doses were first given, and gradually increased, till, two or three years afterwards, the patient was taking 260 to 300 grains daily.

In nearly all the cases the number of attacks diminished considerably; two cases, however, were not benefited.

If bromism occurs Féré recommends that the drug should be stopped and purgatives given, and pilocarpin injected subcutaneously to promote its elimination.

Féré believes that mild cases can best be treated with moderate doses of bromides, but considers that in severe and obstinate cases we should not hesitate to give large doses.—*Rev. de Méd.*, March, 1893, and *Med. Chronicle*, May, 1893.

III. LIME-METABOLISM IN RICKETS.

Vierordt (Heidelberg) gives an account of investigations on this subject which he has made in both healthy and rickety children. He examined the amount of lime in the urine while the children were kept on the same diet, also while they were being given large amounts of inorganic lime salts. The children all lived in the same manner; they were fed on broth and milk. It was noticed that there was a kind of constancy in the amount of lime excreted, about 0·003 gram per kilogram of body-weight. In this respect there was no difference between healthy and rickety children. Inorganic salts of lime to the amount of 0·2 gram per kilogram were given; the amount of lime excreted was rather more than doubled, but in this case again there was no difference found between the rickety and the healthy children.

Rickety children, therefore, if the same amount of lime be given, excrete the same amount as healthy children. We may

conclude that the absorption of lime is not impaired in rickets; and insufficient absorption of lime cannot be the cause of the disease, or of the changes in the bones.—*Centralblatt f. Inn. Med.*, 1893, No. 25.

IV. ON PULMONARY REGURGITATION.

In a very complete paper on this subject Gerhardt states that this lesion occurs in the proportion of 1·5 per cent. of all cases of valvular heart disease. He collected from the literature of the subject records of twenty-nine cases. In three-fourths of these the lesion was the result of endocarditis, which in seven cases was the result of rheumatic fever; one case was caused by gonorrhœal infection; in one case an injury seemed to be the starting-point of the trouble; in one case the disease originated after childbirth. In one case the pulmonary disease was certainly primary, and in another case probably so. Congenital malformation and the persistence of fœtal conditions predisposed to disease of these valves.

In fifteen cases only the pulmonary valves were affected; the other valve diseased was most often the aortic, rarely the mitral. The patients' ages varied from eleven to eighty-four years.

The signs of the affection are as follows:—The impulse is too powerful, and is perceived over too large an area, being especially marked to the right of the usual position of the impulse. The heart dulness is increased, this increase being caused by hypertrophy and dilatation of the right chambers of the heart. A diastolic murmur is heard, loudest over the origin of the pulmonary artery, and conducted downwads to the apex, and is not conducted along the great arteries into the neck. The second sound is sometimes present, sometimes lost; frequently a systolic murmur co-existed, showing stenosis as well as regurgitation. In addition to these physical signs, Gerhardt noticed two others to which attention does not seem to have been called. In five cases he noticed that over every part of the lungs, especially over those parts most remote from the heart, he heard two dull sounds, something like murmurs. This he calls double sound in the branches of the pulmonary artery (Doppelton der Lungenarterienäste). A second sign, which may be called audible capillary pulse in the pulmonary circulation, is thus described: in parts of the chest at some distance from the heart (*e.g.*, at the

outer border of the right shoulder blade), when the patient draws a long, deep breath, the vesicular respiratory murmur grows louder with each systole of the heart, and then becomes more feeble.—*Charité Annalen*, xvii., p. 255.

V. THE TREATMENT OF TONSILLITIS BY MEANS OF INJECTIONS INTO THE SUBSTANCE OF THE GLAND.

Prof. v. Ziemssen read a paper on this subject at the Congress on Medicine held at Wiesbaden, April, 1893. Injections of a solution of carbolic acid were first recommended by Traube and Heubner in scarlatina; v. Ziemssen has found them useful in the various forms of tonsillitis, catarrhal, lacunar (follicular) and phlegmonous. He was induced to try this treatment by the consideration that most cases of tonsillitis are caused by some infective virus. All recent investigations into the pathological anatomy of the tonsils have shown that in the follicles there are found colonies of micro-organisms of all kinds—indeed they are found in the follicles of healthy tonsils; but it appears that as long as the epithelium is healthy they do no harm; when, however, the epithelium is in any way injured they make their way into the substance of the tonsil and excite inflammation there. In the sore throat of scarlatina in severe cases there are nearly always small abscesses in the centres of the tonsils, from which foci inflammation spreads to the cervical lymph glands, and may cause general septicæmia.

Von Ziemssen's treatment in cases of catarrhal tonsillitis consists in the injection of seven minims of a two per cent. solution of carbolic acid into the middle of each tonsil. He uses for this purpose a specially constructed syringe. Soon after the injection pain and difficulty in swallowing diminish, and the temperature becomes normal. Usually only one injection into each tonsil is necessary; sometimes a second is required in order to check the inflammation. It might be said that the fall in temperature was due to the natural termination of the attack; from the constancy, however, with which this fall followed the injections, and the immediate improvement of the symptoms, von Ziemssen believes the injections check the activity of the active microbes which are causing the inflammation.

The injections are easy to carry out, and do not irritate the throat.

Sahli (Berne), in the discussion which followed, stated his

agreement with v. Ziemssen as to the beneficial effect of this treatment both in tonsillitis and in scarlatinal sore throat. He said that latterly, instead of carbolic acid, he had been using iodine trichloride—a strong antiseptic, yet not a very poisonous body. He uses a two per cent. solution of this body in water, and injects one or two minims of this into the tissues in different places once or twice daily. He uses this method also in diphtheria, with surprisingly good results. He strongly recommends this treatment for general adoption, and adds that he uses an ordinary hypodermic syringe, and that the procedure is extremely simple and easy to carry out.—*Centralblatt f. innere Med.*, No. 25, 1893.

VI. THE CAUSE OF EHRLICH'S "DIAZO-REACTION."

Drs. Munson and Oertel (Newhaven, Conn.), while engaged in experimental work on the various abnormal constituents of diabetic urine, noticed that a urine which was known to contain large quantities of aceto-acetic acid ($CH_3-CO-CH_2-COOH$), and which gave a Bordeaux red, with a solution of ferric chloride, also gave a most marked diazo-reaction, these two reactions always running parallel in their intensity. They investigated various bodies found in diabetic urine, but the only one which gave both of these colour tests was aceto-acetic acid. They next prepared a solution of barium aceto-acetate, and compared it with urines from six cases of different diseases, all of which had this in common, that they gave positive results with the diazo-reaction.

The tests used were:—(1) Ferric chloride; (2) reactions disappearing on boiling or strongly acidifying; (3) iodoform test; (4) acetone in distillate; (5) extract with ether; (6) ethereal extract and ferric chloride test. In every case the reactions were identical. They therefore feel justified in announcing that aceto-acetic acid is the ætiological factor in the production of the diazo reaction in pathological urines; the acid probably occurs in combination with ammonia.

With regard to the value of the reaction as a means of diagnosis, they do not attach much importance to it; it is probably of no greater importance than the excess of phosphates or the trace of albumen with which it is so frequently observed.—*N. Y. Med. Jour.*, Feb. 4, 1893.

VII. CHROMIC ACID AS A TEST FOR ALBUMEN AND BILE.

Prof. Rosenbach recommends a 5 per cent. solution of chromic acid as a test for albumen in urine. When a few drops of this solution are added to albuminous urine, yellow flocculi are at once precipitated. It also is useful in detecting bile pigments. When the solution of the acid is added drop by drop to the urine, if bile pigments are present it becomes intensely green, and this colour lasts for some time. The test may be modified by saturating white filter-paper with the acid, and adding the urine to it, when if bile pigments are present, the green colour will at once develop. *Deutsch. med. Wochenschrift.*

THE "MARITIME MEDICAL NEWS."

This monthly periodical is published in Halifax, and is now in its third year. Its contents are of the average quantity and quality. We observe that the Ontario College of Physicians and Surgeons requires a five years' course of study, not being itself a teaching body. Dr. R. N. M'Charles reports an extraordinary case of an elderly farmer who entertained a frog in his stomach for 18 months. He swallowed, it would seem, some spawn in water, and unpleasant symptoms set in the same night. He consulted three doctors, two of whom candidly confessed ignorance, the third diagnosticating hepatic cancer, all agreeing that the patient had not long to live. He improved, however, though his health remained feeble and his spirits depressed; and 14 months after the accident he consulted the author for an attack of acute bronchitis, complaining then of gastric disturbance also. Recovering from the bronchial ailment he returned home and consulted two more doctors for his gastric complaint. They told him he had heart disease. "On his return in last March I was called in to see him, I found him suffering from both cardiac and gastric ailments. I directed my treatment to the heart, expecting to treat him for the other ailment later on. But as he felt he was improving he did not send for me again. About the first of this month the stomach trouble returned, or rather became worse, for he was never free from it. On the eighth he felt unusually miserable. The choking sensations were very troublesome. He felt as if he were going to die. During one of those choking spasms he made a strong effort to clear his throat of the 'lump.' Judge his pleasure and surprise on succeeding in throwing up a lively frog. Its body was about one and a half inches long. Its colour at first was pale and gelatinous looking, but now it is much darker, is gradually assuming a more natural colour since it has been exposed to the light.'

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

Waterborne Cholera.[a] By ERNEST HART, M.D., Editor of the British Medical Journal; Chairman of the National Health Society.

(*Continued from page 240.*)

D.—ITALIAN EXPERIENCES.

It is to Marseilles and Toulon that Italy is indebted for the severe epidemic of cholera which swept over the country in the autumn of 1884. When cholera broke out in the neighbourhood of Marseilles and Toulon, numbers of Italian workmen who were then employed in that neighbourhood fled across the frontier into their native country. Strenuous efforts were made to enforce land quarantine against them on the frontier, and thousands of travellers were, in consequence, detained in lazarettos at Ventimiglia, San Dalmazzo, Bardonnechio, Saluzzo, Pinerolo, and other places; but in spite of bayonets and batons, this theoretically perfect but practically discredited method of withstanding the march of infection once more utterly failed; and a great many frightened and unwholesome fugitives, bearing with them, in their persons or in their filthy clothing or chattels, the germs of the disease, succeeded in evading the cruel police cordons. By July 22 it was alleged that cholera had broken out at Spezzia, having, it is said, been introduced by arrivals from Toulon. Many of the inhabitants of Spezzia at once fled terror-stricken from the town. Gradually the disease spread through the provinces of Turin, Massa, Parma, Bergamo, Cuneo, on to Campobasso and Cosenza in the south of the kingdom. Before the end of the year some 27,000 attacks of cholera and upwards of 14,000 deaths had occurred, at least forty-four out of the sixty-six Italian provinces having been visited.

It was in the city and province of Naples that the severest outbreak of the disease occurred. There is a general agreement that the infection

[a] An Address delivered before the Forty-fourth Annual Meeting of the American Medical Association, held at Milwaukee, Wis., June 7, 1893.

was introduced from Marseilles by Italian workmen and sailors, although there may be some doubt as to which of the several channels was actually the earliest in operation. According to the United States Consul, some fifteen Italian sailors sailed from Marseilles, and arrived in Naples about the end of July. At the time of landing their presence was unknown to the municipal authorities. They passed one night in the Strada di Porto, but, being discovered, they were sent back to their ship, and left, presumably for Palermo. Their stay, however, was thought by some to have been long enough for them to have sown the seeds of the disease in Naples; but, according to the British Consul, the cholera was most probably introduced by sixty-five Sicilian workmen who, having crossed the frontier from Marseilles, were detained in quarantine for some prescribed period on a floating hospital at Spezzia, and thence were shipped to Naples, where they arrived on August 3, and took up their quarters in the Porto district, one of the most squalid and insanitary quarters of the city. On August 6 and August 18 other similar detachments arrived. One man who arrived on the latter date put up in the Marcato district, another of the worst parts of the town, and, sickening with cholera the same night, died within forty-eight hours. Other cases followed producing in the circumstances well-founded anxiety; but it was not until September 1st that the disease broke out with sudden and considerable violence. On that day there were 60 cases and 20 deaths notified; on the next day there were 127 fresh cases and 65 deaths; and so on until on September 11th 949 fresh cases and 357 deaths were announced. This was followed by 848 fresh cases and 386 deaths on the 12th, and 693 fresh cases and 231 deaths on the 13th, after which there was a gradual decrease in the daily numbers until the epidemic practically ceased early in November. Between August 23 and November 9 some 12,345 cases and 7,086 deaths had occurred among a population of 492,908.

Anyone who has visited Naples must, while charmed with the unequalled natural loveliness of its magnificent site, have been struck by the squalor and unwholesomeness of the place. After visiting the town just before the epidemic of 1884, I was driven to describe it as the dirtiest, raggedist, most obscene and squalid city of Europe. There was hardly anywhere to be seen a population more poverty-stricken, more miserably housed, more filthy in their habits. The atmosphere of a great part of the town was an infection, the defilement of the streets was unspeakable; the mortality of the city was excessive, although it is surprising, almost incredible, that it was not greater. When, therefore, cholera reached Naples, in 1884, it found a most congenial resting-place, and in the peculiar water supply arrangements in vogue there was the most complete provision for its indefinite extension. That peculiar system, and its relation to the nastiness of the domestic arrangements, are clearly

described by Dr. Shakespeare in his interesting work on cholera. He points out that the houses of the poor quarters are many stories in height, and are tenanted by families who live in flats. The upper flats are constructed upon the same plan as the lower ones, the kitchens of all being directly over each other. The water-closets, when they exist, usually occupy one corner of the kitchen, and connect by untrapped pipes with the main perpendicular drain, which leads to a *pozzo nero*, or sort of filth receptacle in the basement of the house. It is usually only the overflow of the fluid contents of the *pozzo nero* which enters the main house drain and passes to the street sewer. The walls of the *pozzi* are usually very imperfectly, or not at all cemented, the floor of the sink being formed by the porous earth. The solid accumulations in the *pozzi neri* are often not removed more than once a year. In most of the large houses there was, at least until 1885, a very peculiar individual provision for water. Running water flows in masonry trenches from house to house, ordinarily a little underground. In the course of the trench, as it passes beneath the house, there is a cistern sunk beneath the bottom of the trench, in order to form a species of water reservoir for household purposes. This reservoir is usually located in the part of the building immediately under the kitchens of the various floors, and is in communication with them by means of a bucket attached to a rope which runs over a pulley at the top of the house, so that the occupants of the various stories can draw the water without the necessity of descending to the ground floor. The location of these reservoirs is, therefore, frequently in close proximity to that of the *pozzi neri*, and, from what has already been said of the construction of these *pozzi neri*, it is easily understood how filtration from them must unavoidably reach and contaminate the water of the reservoirs. And the fact that the water trench passes from house to house and directly communicates with the reservoirs explains how, in houses where the *pozzo nero* and the reservoir are quite distinct, the water drawn from the reservoir is often necessarily contaminated by the *pozzi neri* of houses up stream.

Besides this household provision of water, there is also a public supply by means of a comparatively limited number of public fountains in the streets and public squares. The majority of the inhabitants recognise the fact that the water of the public fountains is of a better quality for drinking purposes than that drawn from the reservoir within the houses, and those living on the ground floors, and not too far distant from the nearest public fountain habitually resort to the fountain for their drinking water, using, however, the reservoir water for other domestic purposes. Dr. Shakespeare notes in connection with this practice the curious fact that during the prevalence of cholera in Naples in 1884, and, indeed, in nearly all of the preceding epidemics, contrary to the customary rule in cholera epidemics in most parts of the world, persons dwelling in the

upper stories suffered the most severely from the disease. The explanation of this fact is patent. The ease with which those people could obtain water from the reservoir, and the inconvenience of resorting to public fountains, caused them to use water which was by far the most likely to be contaminated by cholera discharges.

In addition to the contamination of the reservoir water by cholera discharges which might reach the *pozzo nero*, in not a few instances the reservoir water was further contaminated by the reckless practice of washing linen soiled with choleraic discharges in the trenches of running water beneath the houses.

It is difficult to realise the fact that such a system as this—a system which could scarcely be better designed for the most effectual distribution of disease—was to be found towards the close of the nineteenth century in such a populous and important city as Naples. Fortunately, the danger was at last recognised in 1884, and in the following year pure water was brought into the city from a mountain stream—the Serino, eighty miles distant—and was very generally distributed through iron pipes under pressure. At the same time the old system of distribution by water trenches coursing beneath the dwellings was, to a great extent done away with. Neither in 1885 nor in 1886, notwithstanding the existence of cholera in the vicinity, and the not infrequent arrival of refugees from cholera-stricken localities, did Naples suffer from even limited epidemic outbreaks of the disease. This was true also of the year 1887, until, in consequence of a break in the new water conduit from the distant mountain stream, recourse for a few days was had very generally to the old water system. At this time there were numerous refugees in the city, as, in fact, there had been for weeks past, from various places in southern Italy and Sicily, including several suburban towns where cholera was more or less prevalent. Moreover, there were, and had been, almost constantly occurring a few isolated cases of the disease among these refugees without, however, a local epidemic being produced thereby. But very soon after the interruption of the supply of the Serino water there were one or two quite sharp explosions of local epidemics around these cases. The speedy repair of the Serino aqueduct enabled the municipal authorities again to turn on that pure water throughout the city, and, practically coincident with that action the local epidemics, which had occasioned so much alarm, ceased almost as suddenly as they had begun.

It is interesting in this connection to note that there has been a marked decrease in the prevalence of enteric and typhus fevers since the introduction of the new water service into Naples.

The disease reached the city of Genoa in September, 1884, and the severe epidemic which immediately ensued is one of the most interesting and conclusive examples recorded of the spread of cholera by water—by

water, moreover, which was of exceptional natural purity until the moment it received the specific infection.

A few sporadic cases of cholera occurred in Genoa during the first fortnight of September; but immediately following the 21st of that month the disease suddenly and rapidly spread, there being 9 cases on September 24, 52 cases on the 25th, 42 on the 26th, 38 on the 27th, 47 on the 28th, 64 on the 29th, followed by a rapid decline to 59, 40, 22, 21, 23, 22, 12, 13, 10, 5, 6, 3, 6, 2, 5, 7, 0, 1, 4, 4, the last case occurring on October 20. The deaths during the days following September 22 were 2, 2, 18, 32, 27, 37, 47, 30, 19, 25, 28, 20, 22, 17, 10, 10, 13, 10, 10, 10, 3, 6. These figures are themselves very suggestive of a water influence, and this explanation of the epidemic spread was strongly confirmed by the circumstance that, during the early days the disease not only attacked indifferently the poorest and the richest quarters, but was also singularly disseminated throughout the whole city. In the penal Bagno di S. Giuliano, an isolated place where the prisoners are kept in strictest confinement, there were five cases in the first five days of the epidemic, and at the same time the disease made headway upon the heights of S. Benigno at 80 metres above the level of the sea. In every part of the city there were attacks, without distinction of the density of the population, or of social status, or of hygienic conditions or precautions. The dissemination was so general that the first 300 cases were found to be scattered along 158 different streets of the city.

Early in the epidemic a resident physician, an old friend of mine, whose acquaintance I had made when I organised and despatched, with his aid and that of Dr. Wolfe, a convoy of medical succour to the army of Garibaldi on his famous expedition from Sicily, telegraphed to me from Genoa :—"Your water theory of cholera at fault. Genoa has a fine supply of pure water from a high mountain source. Cholera has broken out in districts so supplied, and we have already 100 cases a day. What is to be done?" I replied by telegraph :—"Cannot be at fault; must be water; cannot be anything else. Examine every foot of your water pipes, and trace to the supply pipes' source." Genoa, it may be remarked is supplied by three aqueducts—the Civic and the Galliera, about fifteen miles long, fed by the River Gorgento, and the Nicolay, about thirteen miles in length and supplied by the River Scrivia. An analysis of the first 50 cases of cholera in the city disclosed the fact that as many as 44 were in houses supplied with Nicolay water; of the 50 succeeding cases, 43 dwelt in houses supplied with Nicolay water; and of the third group of 50 cases, 45 were in houses so supplied. In fact, out of the first 300 cases, as many as 93 per cent. inhabited houses in which the Nicolay water was distributed. Further, although the poorhouse of the town is in a very crowded centre, no case of cholera occurred in it, as the authorities of that institution cut off the Nicolay supply. Again, taking the

Via Bianchetti, cases of cholera occurred on the side which was served with Nicolay water, while there was not a case on the other side, which had water from a different source.

Thus the Nicolay water stood convicted, and on further investigation the mystery was readily solved. Near the beginning of the Nicolay aqueduct is the village of Busalla, and at the time in question some hundreds of workmen including, there is reason to believe, many refugees from infected localities, were engaged on a new railroad, and are described as living in the most filthy conditions. Cholera broke out at Busalla on September 14, and several cases thereafter daily occurred until the end of the month. Inquiry disclosed the fact that nearly all the workmen, both the sick and the healthy, had their clothes washed in the Scrivia, or in a tributary of that stream, which supplies the Nicolay aqueduct with its water.

As soon as these facts were known the mayor of Genoa, with very commendable promptitude and decision, prohibited for a time the distribution of the water of the Nicolay aqueduct, or rather the distribution by that aqueduct of the water of the Scrivia. This was done on Septemtember 28. On September 30 the cases of cholera fell from 64 to 59, and, as already shown, during the succeeding days the number of cases suddenly dropped to 40, 27, 22, 21, followed by a rapid decline to *nil* on October 17.

In 1885 cholera occurred in various parts of the mainland of Italy in the provinces of Ferrara, Genoa, Massa, Modena, Parma, Reggio Emilia, Rovego, Trepani, Venice and elsewhere. But the severest visitation that year was at Palermo, in Sicily. Into that town, which has been richly endowed by Nature, but has been rendered most unsavoury by man, the cholera was imported from Marseilles by the steamship Salunto, in spite of the fact that that vessel had been subjected to seven days' quarantine in the Gulf of Assinara. Between August 23 and 25, 1885, a woman living in a little street in Palermo received, for the purpose of washing, a parcel of linen which had been sent to her husband, a sailor on board the Salunto. That woman, after having washed the linen, was seized with vomiting and diarrhœa. On the following day a young woman who lived with her developed the same symptoms, as did also several other women in the neighbourhood during the next few days. On September 13 there were 13 cases and 4 deaths; on the 14th there were 13 cases, on the 15th 7 cases; but on the 16th the number of cases suddenly sprang to 36, on the 17th to 132, on the 18th to 221, and on the 19th to 258. From that date the disease began slowly but gradually to decrease until the middle of November, by which time 5,535 cases and 2,959 deaths had occurred in Palermo among a population of about 275,000.

The opportunities for the spread of the disease, when once introduced into Palermo, were very similar to, though much more pronounced than

those in Naples. The water supply is brought from the surrounding hills, usually in open trenches of masonry. Within the town these trenches are sometimes uncovered, or they pass beneath the houses, in the basements of which there are traps in the top of the water trenches for the purpose of enabling the water to be taken from them direct. There are also a number of public fountains throughout the city supplied by this running water, and there are many wells exposed to all the most filthy contamination. The washing of clothing is very common in the water trenches, both before and after the city limits are reached.

The habits of the people are of the most filthy character, and in the presence of the cholera the ignorance and superstition of the populace greatly harassed the authorities, and increased their difficulties. It is owing in great measure to the enlightened and vigorous action of Dr. Albonesi, who was appointed director of the local sanitary council, that the early termination of the epidemic is mainly due. That Dr. Albonesi thoroughly understood the methods by which cholera spreads is shown by an eloquent pamphlet which he published shortly after the epidemic on the duties of governments and countries during epidemics. He directed the closing of all wells in the affected localities, and inaugurated thorough cleansing operations of all kinds. The closing of the wells was followed by the decline of the epidemic. On his advice also the boiling of the water before use was very generally adopted by the more intelligent inhabitants, and with marked benefit as regards their immunity from infection.

I have only given details of the three greatest outbreaks in Italy in 1884–85, but every community throughout the country that was attacked by the disease taught the same lessons.

(E) SPANISH EXPERIENCES.

In 1885 Spain was the seat of a cholera epidemic of exceptional ferocity, which, having sprung from a few initial imported cases, rapidly embraced the greater part of the peninsula. There is, unfortunately, little sign at present that Spain herself has profited from her terrible lesson, but for those who wish to master the mysteries of cholera, the Spanish epidemic of 1885 illustrates clearly the futility of so-called quarantines, both on sea and on land, and the potent agency of rivers and streams, once infected, in spreading the disease for long distances, when the population living on their banks drink their waters.

The earliest cases of cholera occurred in Alicante, on the south-east coast, towards the end of August, 1884. There is, as usual, some conflict as to the exact manner in which the infection first reached Spain. According to one account, a family of Spaniards returning from Marseilles was responsible. That family sailed from Marseilles to the French province of Oran, on the northern coast of Africa, where they procured

transport for themselves and for their personal effects to a maritime village near Alicante. They successfully evaded the surveillance of the Spanish quarantine officers, and carried, it is thought, the germs of the disease with them. According to another version, the disease was brought by a vessel from Algiers, which, after performing a week's quarantine at Alicante, proceeded to land her passengers. Among the latter was a family from Cette, which took up its abode in the house where cases of cholera subsequently appeared. During the third week of September isolated outbreaks occurred in the province of Tarragona, also bordering on the Mediterranean, and in the neighbouring provinces of Lerida and Saragossa. Later on, in November, cases cropped up in the coast province of Valencia and in the inland province of Toledo.

The disease slumbered through the winter around Gandia, in Alicante, and in the following April broke into an epidemic at Játiva and Alcira. From these quarters the disease was soon carried far and wide by the labourers, who usually disperse in May from the rice plantations of Valencia. Henceforward sanitary cordons and such like measures failed to stay the march of the epidemic—indeed, in some instances, they seem to have had the contrary effect. Without attempting here to follow that march step by step, the result may be summarised from a tabular statement issued in May, 1886 by the Spanish Minister of the interior. It appears that between the first cases of the disease notified on February 5 in the province of Valencia, until the last cases notified on December 31, 1885, in Salamanca and Cadiz, 2,247 local governments ("ayuntamientos"), included in 46 provinces, and having an aggregate population of 6,576,641, had been invaded, 338,685 cases and 119,624 deaths having occurred among them. The population which escaped the scourge is stated to have been 10,396,839, distributed among 7,067 local governments.

Sanitation and domestic hygiene are of a very primitive description in Spain, if indeed they can be said to be at all regarded by the bulk of the population. The streets and roads of the towns and villages, and the back yards of the houses are, without any consideration for decency or health, made the depository of nearly all the fæcal and other filth of the population. The dwellings of all but the wealthiest are old and unwholesome, with frequent accumulations of filth close beside them; and drainage properly so-called may be said to be non-existent, only a very few of the largest towns possessing any system of drainage whatever.

The open rivers and streams are the usual sources of water supply, and in Valencia and some other provinces the open agricultural irrigation canals serve also for the domestic supplies. But these rivers and canals too often serve as public sewers, and, as in France and Italy, the washing of clothes is usually performed in them. In some cities and towns there are also wells; but apart from their being sunk in a recklessly polluted

soil, there is seldom any attempt made to protect those wells against infiltration of the filth which so often surrounds them. In Murcia and Andalusia there is still the old Moorish custom of storing water in huge earthen jars. These jars are sometimes to be found ranged around the house courts, reminding one of tales of the Arabian Nights; but often they are sunk beneath the floor of the yard, where they are in close proximity to the *cloaca negra*, or cesspit of the establishment, and are liable to receive the overflow or soakage from it. These *cloacas negras*, it may be added, when they exist, receive all the fæcal and other filth of the household, and their contents usually soak away into the surrounding soil.

In a work published in 1886 on cholera in its relation to water,[a] Mr. George Higgin has dealt very clearly with the Spanish epidemic of 1885, and by comparative pictures of the circumstances of several typical towns, he has graphically and conclusively shown that it was *par excellence* a waterborne epidemic that, specifically infected, more than any other unwholesome circumstance, was the cause of the fearful mortality and misery which then spread throughout the length and breadth of the peninsula. He shows that this formidable disease never became truly epidemic or dangerous in any Spanish city in which there was a pure and good supply of water, and where proper means were taken to guard against the sources being polluted by any of the specific choleraic poison. He shows how, in this way, the cities of Toledo, Seville, Malaga and Madrid escaped comparatively lightly, while such places as Aranjuez, Saragossa, Granada and Valencia suffered very severely.

Taking Madrid, it is noticeable that out of a population of 397,816, there were only 2,207 attacks and 1,336 deaths, or barely as many as occurred in a couple of days in the previous epidemic of 1865. The water supply of the town is derived from the Lozoya river among the Guadurama mountains, and was completed shortly before 1865. The greater part of the drainage was also then completed, but at the time the new water supply had scarcely come into use, the large majority of the houses being supplied from the old fountains which existed in various parts of the city. During the last twenty-five years the use of the Lozoya water has become very general, and an ample supply has been provided for washing the streets and flushing the sewers. Madrid is well drained, but the means of disposing of the sewage is very unsatisfactory.

When the existence of cholera in Madrid was recognised in 1885, one of the first acts of the municipality was to attend to the water supply. There existed 11 ancient sources which supplied 85 taps or fountains, 22 of which were public, and at which water carriers were allowed to fill their barrels, while the remaining 63 belonged to groups of houses. In spite of the excellent supply brought in from the Lozoya, these old sources

[a] Cholera in its Relation to Water Supply. By George Higgin. 1886.

were still a great deal used by the inhabitants—many, from old habit, preferring to use the same water which their fathers had used, while many were not willing to incur the expense of laying on the new supply. In view of the impossibility of effectually guarding against the possible contamination of some of these sources of supply, the municipality by degrees closed all of them except one. The central government undertook the custody of the Lozoya aqueduct, and during the whole time of the existence of cholera in the city the uncovered portion of that aqueduct was patrolled by armed guards, no one being permitted to approach it without special order. There is every reason to attribute to these energetic measures the comparative immunity of Madrid from cholera during the epidemic of 1885. Such cases of the disease as did occur in the city seemed to be associated not with the water, but with the outfalls of the sewers around which they seemed to cluster.

Toledo, the ancient capital of Spain, now having a population of about 20,000, differs widely from Madrid, its sanitary arrangements being much worse. It was supplied with water from the river Tagus, which flows around the city, the water being lifted by pumps. Above Toledo, on the same river, is situated Aranjuez, and above that town again, on the Manzanares, which is a feeder of the Tagus, is situated Madrid. In both of these latter towns cholera existed in 1885, being unusually severe at Aranjuez. The Governor of Toledo, recognising the suspicious character of the water, promptly stopped the pumps and obliged the inhabitants to send for their drinking water to a distant spring, and even forbade anyone to bathe or wash clothes in the river. The measure was a strong one, but it saved the city, for there were not more than 200 cases there during the epidemic.

Next, Mr. Higgin points to Seville, the third city in Spain, with a population of 134,000, and with very bad sanitary arrangements. There is no proper drainage, and the city is not healthy. The town, however, possesses an excellent and well protected water supply. But one of the suburbs of the city called Triana, containing about 30,000 inhabitants, is situated on the western side of the river Guadalquiver, which is fed by the rivers Darro and Genil, which flow through Granada, and the poor in this suburb drink generally the water of the river. The Seville authorities, however, in good time prevented the use of any water from the river, either for dietetic or other purposes. The result was that Seville practically escaped the disease, although it raged fearfully in Granada, higher up the river, and descending the river Genil, which runs through Granada, attacked the towns of Herera, Ecija, and others in the province of Seville. It broke out also at Cordova and other towns on the Guadalquiver, of which the Genil is an affluent, and it appeared in Palma, Utrera, Puerto Real, Puerto Santa Maria and Cadiz, forming a circle around Cadiz, but the city itself escaped almost completely. Xerez, which lies between

Seville and Cadiz, and possesses an excellent water supply, also escaped the disease. Malaga, which is in a bad sanitary condition, except that it has been provided with an excellent water supply, also escaped very lightly.

Taking now some towns which were severely visited by the cholera, it is seen that Granada, with a population of 76,000, has bad sanitary arrangements, only a tithe of the houses being drained. The water supply is from the Genil and Darro rivers, to which we have already referred. A small portion is supplied from a spring. The canals carrying the water from the rivers are uncovered and exposed to all kinds of contamination. The cholera broke out in July, spread with frightful rapidity, and by the middle of August over 450 cases a day were officially recorded. No attempt had been made, as at Toledo, to suppress the old water Supply. From Granada the course of the cholera may be followed down the rivers Darro and Genil, the infected waters carrying death wherever they were used for drinking purposes.

Murcia, with a population of 91,000, from which the cholera was imported into Granada, suffered heavily also. The disease was carried into the plains of Murcia by the waters of the river Segura from the baths of Archena, it having been imported into Archena by some invalid soldiers from the infected districts around Valencia. The plain of Murcia is irrigated by the waters of the Segura, and the disease commenced in this district with the death of a labourer who had drunk the water of one of the irrigation canals. The epidemic raged principally among the little cottages scattered thickly over the plain.

According to Mr. Higgin, no case in reference to water supply is so instructive as that of the town of Valencia. This city is fairly well drained, as drainage goes in Spain. The water supply is derived from the river Turia, is passed through sand filters, and is stored in a covered reservoir. When cholera broke out in the spring of 1885, it came very near Valencia, but did not touch it. At last, in the middle of May, having crossed the water supply of the city, and thoroughly infected the river, it fiercely attacked Valencia, and by the end of June the number of cases had risen to 700 a day, among a population of 143,000.

The experience of Saragossa is also instructive. Its principal water supply is derived from the Aragon canal, which in its turn is fed by the Ebro, near Tudela. The water became infected, the disease broke out in Saragossa, and some 10,000 cases occurred among a population of about 84,000. The preventive measures adopted by the authorities unfortunately came too late. These cases could be multiplied almost indefinitely, and the same lessons be learned from them.

(To be concluded.)

THE PREVALENCE OF TYPHOID FEVER IN DUBLIN.

(*Continued from Page 254 and concluded.*)

Report on Bacteriology of Typhoid Fever. By PROFESSOR M'WEENEY.

THERE is now no doubt that typhoid fever is caused by micro-organisms which enter the body usually through the mouth and multiply in the intestines. These micro-organisms attack certain parts of the intestinal wall, and force their way or are absorbed into the living tissues. They spread to the mèsenteric glands, spleen, liver, and kidney, and, after a struggle with the active cells or *phagocytes* of the human body, are usually destroyed and consumed. While this struggle is going on, the micro-organisms disengage from themselves poisonous matters which produce geneial disturbances of function, especially of heat-regulation, which we agree to term *fever*. Their presence in large numbers in a given part also produces disturbance of nutrition in that part, which may lead to actual necrosis or death of the part. Thus are produced the intestinal ulcerations so characteristic of the disease in question.

Up to quite lately it was thought that the micro-organisms which produce typhoid fever are of one kind only, and as this kind is of a rod shape, and was first described (1880) by Eberth, it is known as *Eberth's Bacillus.* (Bacillus means a little rod.) These bacilli are always to be found in the dejecta of typhoid patients and in their internal organs after death. They are supposed to get from one patient to another and thus spread the disease. They do not, however, seem capable of doing so directly, they require to live for some time *outside* the body before becoming capable of transmitting the infection. This interval is naturally spent in the places where dejecta are thrown, viz.—sewers, cesspools, &c.

Lately it has become known that typhoid, or, at all events, a disease so closely resembling typhoid as to be undistinguishable from it, is produced by another kind of micro-organisms closely resembling Eberth's Bacillus, but differs from it in this, amongst other characters, that it is normally found in the bowels of every healthy person—even in those of children at the breast. Eberth's Bacillus, on the other hand, is only found when typhoid fever is present. Those who say that this second kind of micro-organisms, or, to give it its proper name, *Bacillus coli communis*, is the cause of typhoid, if asked why it is that it lives in so many people's intestines and does them no harm, reply that it must first spend some time in the liquid water-diluted fæcal matter of the sewers before it becomes capable of originating typhoid fever.

The main point of interest to practical sanitarians in this discussion is, that whether it be Eberth's Bacillus or the *Bacillus coli communis* which causes typhoid, *the essential feature of the infection is that it can only be produced by germs which have festered for some time in the corruption of the sewer. The problem of preventing typhoid thus resolves itself into that of preventing our food and drink and air from coming in contact with sewer-material and sewer-air.* It is exceedingly probable that the typhoid-producing microbes are not equally at home in all kinds of sewer filth. They do not flourish in semi-solid heaps of fæcal matter, such as the contents of privies, but are speedily reduced in vitality and killed. On the contrary, they thrive exceedingly when the fæcal matter is well diluted with water. This is accounted for by the unquestioned fact that typhoid is especially prevalent in places where the water-carriage of fæces is the established system.

The bacilli swarm in the numerous places where the filthy water is allowed to stagnate and acquire the virulence which enables them to produce typhoid when they get into the human alimentary canal. This they may do in various ways—notably, as I think, through the contamination of food-stuffs—above all of milk—by gaseous sewer emanations obtaining admittance to pantries, larders, &c.

The facts just stated have been gained at the cost of much labour by the bacteriologists. How is the sanitarian to apply them? As follows:—

First.—Disinfect all typhoid stools and linen.

Second.—Keep sewer emanations out of your houses, and *above all out of your larder.*

Third.—Mind your water supply; boil milk and water before use in epidemic times.

Fourth.—Keep yourself in good condition, remembering that disease germs can attack only a *lowered* constitution.

Fifth.—Expose the sewer water to direct sunlight in a thin layer for two hours. *All* germs will be killed. Five hours in diffuse daylight will do the same. Buchner has lately found that two hours in the sun will kill any disease germs. You will thus do away with such numbers of disease germs that if typhoid be caused by a *specific* germ proper to itself, a great diminution in its incidence might fairly be expected were this plan of treating sewage adopted.

Report on Water Supply of Dublin. By Professor Emerson Reynolds and Dr. C. J. Nixon.

It is generally admitted that contaminated water is frequently the means by which the virus of typhoid fever is distributed throughout a community, hence a necessary part of our inquiry consisted in an examination of the purity and general condition of the Vartry supply to Dublin.

It has been contended of late that the protection of the great reservoir at Roundwood from the sewage of the town is now inadequate, and that the filter beds are, or recently were, in an unsatisfactory state; but these adverse criticisms have been formerly discussed and replied to by the Corporation of Dublin. We do not propose to intervene in that controversy, since to do so effectively would involve a much more complete investigation than we have any authority to make. Hence we have confined our examination to the condition of the water as recently delivered from the street mains in Dublin.

One of the members of this Committee has subjected to careful analysis the Vartry water as supplied direct from the street main at Lincoln-place to the Chemical Laboratories of Trinity College on twenty days, between the 22nd of January and the 24th of February, 1892 (*vide* Statement of Analysis of Sub-soil and Well Water, at end).

The general results obtained are in accordance with all previous analyses made at the same point, and prove that the Vartry water is often, for a considerable time, of exceptionally high purity, but that it is liable to comparatively rapid alterations of quality which have only been detected by almost daily analyses.

The products obtained by analysis from water, which are of chief significance in judging its organic purity, are "Ammonia" and "Organic Nitrogen"; hence, for the sake of clearness, all other substances are excluded from the following Table (p. 326).

The results are stated in grains per imperial gallon of the water taken direct from the street main. The colour each day and degree of filtration are also indicated by numerical values explained at the foot of the Table.

The analyses prove that the Vartry water was in remarkably good condition on the 22nd of January, 1892, and that it continued so until the 26th. On the latter date there was a sensible declension in quality, and on the following day the highest proportions of both "ammonia" and "organic nitrogen" were obtained, while there was no apparent increase in peaty matter. The organic purity on the 27th was distinctly low; but, two days later, the water was again in good condition, and from the following Monday (February 1st) has since been analysed on fifteen days with results which were in most cases satisfactory.

It is evident that the remarkable purity of the water on the greater number of occasions when it was subjected to critical analysis is not consistent with the view that the Roundwood reservoir is liable to constant sewage contamination. On the other hand, the variations in quality detected in this, as in former series of analyses (and not connected with the presence in excess of peaty matter in solution), indicate that such temporary contamination may have been due to causes at work within the area of distribution of the high pressure water supply.

Amongst these causes may be mentioned the replacement of burst pipes by new ones imperfectly cleansed before laying; and the faulty action of street valves, shown by Mr. Wigham to be quite capable of permitting the occasional introduction of foul matter into the water.

The foregoing observations apply only to the Vartry supply taken directly from the street main; but the storage cisterns in houses are often so placed as to lead to the serious contamination of the water. It is by no means unusual to find the cistern of a closet the source of some at least of the drinking water used in a household, although the surface is known to be freely exposed to gaseous and other exhalations of more or less injurious character, while its overflow pipe is often connected directly with the sewer. We have also analysed Vartry water drawn for drinking purposes from imperfectly protected cisterns placed near the steps and in the areas of houses, and, in several instances, such samples were found to be polluted to a very serious extent. Attention was directed to these sources of danger by a member of the Committee shortly after the introduction of Vartry water into Dublin.[a]

Vartry Water—Tabular Statement of Analyses.

No. of Sample	Date, 1892	Colour [b]	Filtration [c]	Ammonia, grains per gallon	Organic Nitrogen, grains per gallon
1	January 22nd	1	1	0·001	0·009
2	,, 26th	2	2	0·002	0·011
3	,, 27th	1	2	0·005	0·015
4	,, 29th	1	2	0·001	0·009
5	February 1st	2	2	0·001	0·011
6	,, 8th	1	1	0·001	0·006
7	,, 9th	1	1	0·001	0·005
8	,, 10th	2	2	0·002	0·011
9	,, 11th	3	1	0·002	0·009
10	,, 12th	3	1	0·001	0·007
11	,, 13th	2	2	0·001	0·007
12	,, 15th	3	2	0·001	0·006
13	,, 16th	2	2	0·003	0·007
14	,, 17th	4	3	0·001	0·009
15	,, 18th	1	1	0·001	0·005
16	,, 19th	2	2	0·001	0·009
17	,, 20th	2	2	0·001	0·010
18	,, 22nd	1	1	0·001	0·009
19	,, 23rd	1	1	0·001	0·007
20	,, 24th	1	1	0·001	0·006

[a] See memorandum by Professor Emerson Reynolds, page 163 of Commissioners' Report. (Royal Commission, 1879–80.)

[b] Under *Colour* the value "1" indicates *least coloured*, and "5" highest of usual range.

[c] Under *Filtration* the value "1" indicates *very good*, and "5" sensibly turbid.

The general results may be thus summarised:—

A large proportion of the twenty samples of Vartry water analysed on the dates specified proved to be well filtered and of high purity, the latter condition being inconsistent with constant pollution at the source. But on several occasions comparatively rapid variations in quality were detected by daily analyses, and on one day, January 27th, the water was in a distinctly unsatisfactory condition, probably owing to local and preventable causes.

Report on Dairy Yards. By Mr. Jonathan Pim.

The Royal Commission of 1879 received some slight evidence as to the condition of dairy yards in the city of Dublin, and in the summary of conclusions with which the Commissioners wound up their Report they said "that cow-sheds and dairies are in improper places within the municipal area, and that some of them possess no adequate appliances for drainage, cleanliness, and ventilation." It was not until the year 1887 that the Corporation of the City of Dublin drew up rules, under the powers given them in that behalf by the Contagious Diseases (Animals) Acts, 1878 and 1886, for the regulation of all dairy yards within the municipal boundary. These rules, if they were properly and strictly enforced, would be sufficient to obviate many of the dangers to the public health arising from ill-kept cow-yards and sheds. They provide for the registration of all persons carrying on the trade or business of a cow-keeper, dairyman, or purveyor of milk, and for the proper inspection of the premises, and they contain important regulations as to the inspection, cleansing, lighting, ventilation, drainage, water supply, &c. There is also a rule forbidding cow-keepers and dairymen to permit any one suffering or recovering from any infectious or contagious disease to milk cows or to sell or deliver the milk or in any way to assist or take part in the business of such cow-keeper or dairyman.

There is no conclusion arrived at by sanitary science during recent years more firmly established on unimpeachable testimony than the fact that of all media for spreading infection milk is one of the most potent. Again and again outbreaks of typhoid and other zymotic fevers have been traced with absolute certainty to the milk supply of the neighbourhood, and it has been shown that some one connected with the cow-yard or with the dairies proper has been suffering from the fever which has thus spread.

The regulations above referred to are quite sufficient to insure such cleanliness if properly carried out, but, as a matter of fact, they are not. There are cow-yards in Dublin which are a disgrace to the city, and are a source of danger to its inhabitants. Scattered both on the north and south side of the river are to be found small yards, dirty, undrained and

unpaved; sometimes with great heaps of manure close up to the reeking unventilated sheds in which the cows are housed. It is almost impossible to arrive at the exact number of these yards, as many of them are small enough to be hidden away behind houses in densely crowded districts, but there are at least over 500 of them. Now, even if the yards were properly kept, it cannot but be dangerous to have them located in such places where the dust and sweepings of all the neighbouring ill-kept tenement houses are constantly being blown across them. Milk left to stand ever so short a time in such places may become contaminated. These yards, however, are, as a rule, kept in a condition of horrible filth. On account of the want of proper drainage they are never dry, and from the heaps of rotten manure sometimes a reeking stream of offensive matter flows down towards the cow-sheds. Even where the yards are well kept, they are sometimes in places which make them dangerous to the public health. One of the best kept yards in the city is to be found in Marrow-bone-lane, but right over it towers the great heap of refuse in the Corporation depôt, and it must often happen that when the wind is blowing towards the dairy yard particles of the filth deposited there by the Corporation carts fall into the yard, and into the milk. This refuse heap is daily added to from the houses of the city. Again, right under, indeed almost against, the walls of both the Cork-street and Hardwicke Fever Hospitals are to be found a large number of yards containing hundreds of cows. It is conceivable that there is some risk of the milk becoming contaminated from such close proximity to these great fever centres.

In very few of the yards which we visited have the cows at all sufficient standing place. In many of them it is impossible for the animals to lie down beside each other, and consequently their condition of filth is more easily imagined than described. By the By-laws of the Corporation the owners are bound to keep the animals clean, but, as far as we have seen, many of the cows in these and in numerous other yards have not been washed or brushed for months. May it not happen that some particles of the fæcal matter, with which the sides of the cows are caked, may fall into the milk cans?

In very many yards the floors of the sheds are as low as, if not lower than, the yards themselves, and there is absolutely no drainage. As a rule, the yards are unpaved and full of manure water, and large heaps of rotting manure are heaped up in corners, often against one of the sheds. It is impossible to speak too strongly of the condition of filth of everything in some of the smaller yards. In one, in the neighbourhood of Summer-hill, there was a privy up against a shed in which were some fifteen cows. In the midst of the abominable filth of these yards are generally to be found the tubs in which the grains for the cattle are prepared. These tubs are sunk in the ground, and there must be great

difficulty in ever getting them properly cleansed. How the men who tend and milk the cows are to live cleanly under such conditions it is hard to understand, but, as a matter of fact, no such pretence is made, and, taken all round, the workmen whom we saw in these yards did not contrast too strongly with their surroundings.

It is impossible within the limit of this report to give greater details of the condition of the Dublin dairy yards. If there were efficient inspection the conditions of things which we saw could not exist.

Report on Sewer Gas. By Mr. THOMAS DREW and Dr. GRAVES.

Unsanitary conditions exist in nearly all the low-rented suburban houses in Dublin. We can say from experience that in many houses in such districts as Rathgar and Rathmines sanitary arrangements have been found which are both barbarous and dangerous.

The following conditions may be found in almost any house taken at random:—

1. That evil institution, the Dublin scullery sink, under the hall door steps is directly connected with the main drain. It has a useless metal bell-trap, which is generally loose, or it has long had it removed altogether.
2. The worse than useless bell, or D traps, are found in the yards and areas, and under windows. Dublin tradesmen may be found any day still fixing these obsolete and illegal contrivances as if sanitary by-laws had never been framed.
3. A disconnecting trap—a first essential of sanitation—is the exception and not the rule.

In the cheaper-rented houses, the one soil-pipe of the house is, as a rule, unventilated at either top or bottom. It is more frequently inside the house than outside. It is frequently brought down through a pantry or larder, and is of cast iron, with open joints. It has almost invariably the worst and foulest description of old pan closet attached, and either an insufficient or no flushing of water. These evils are not confined to the low-rented suburban houses; many high-rented ones in the city are in no better sanitary condition.

We have cognisance of numerous cases of typhoid fever arising from the defects we have indicated. They point to the conclusion that it is necessary that the Sanitary Authority should have the inspectorial powers, and should be enabled to enforce the adoption of efficient safeguards.

Causes other than those Referred to in Preceding Sections. By Dr. STEWART WOODHOUSE and Mr. EDGAR FLINN.

Typhoid Fever may be distributed by the following means:—

1. The atmosphere.—There are abundant instances where water, milk,

and sewerage have been investigated in vain, and no other unsanitary condition is traceable, save that cases of the disease have existed in the immediate neighbourhood, and the inference suggests itself that the germs have been carried by the air from infecting foci. When typhoid fever makes its appearance in institutions isolated from ordinary intercourse, but in proximity to habitations where it exists, the possibility of air-borne contagion must present itself when other modes of access can be excluded.

2. Infected clothing is another of the less generally recognised means of communication. In many households the importance of soaking the soiled linen of fever patients in disinfecting fluid is not known. When this is neglected there is no security against the diffusion of infection through the laundry save whatever is afforded by the heat of the water they are washed with. In the case of death the distribution of the clothing among the relatives or by sale may likewise convey a legacy of poisonous germs.

3. Faulty disposal of infected excreta. This error may be committed in various ways—(*a*) By leaving the excreta too long before disinfection and removal. The discharges are less harmful when fresh, but become dangerous from a fermentation process occurring in them after a period of about twelve hours. (*b*) By throwing the infected excreta on manure heaps, privies, street channels, or the surface of the ground; or (*c*) By disposing of them in any way (usually by means of water-closets used by other occupants of the house) without proper admixture with a disinfecting agent. The public require information as to the suitable kind and strength of the disinfectants, the proportion in which they should be used, and the necessity for their being thoroughly mixed with the excreta.

Report on Drainage System of Dublin. By Mr. Thomas Drew and Dr. Graves.

Sewers and Drains.—On looking into the history of the Dublin Sewers we find it stated in the Report of the Royal Commission, 1879–80, that the old sewers had been formed from time to time without any reference to a general plan, and of the roughest materials, and, as a rule, not true either in line or in gradient. Much credit is given in the Report to the Corporation and their Engineer for the extensive improvements carried out up to that time, but a sewerage system could not be as perfect under such circumstances as one planned in more recent times for a new city on a definite system. When the new sewers were constructed in the streets, the old house drains were in most instances led into them, and were cut off from the old sewers into which they formerly discharged, but in a number of cases the house drains continued to discharge into the old sewers. It is, in our opinion, most important to investigate where such old, forgotten, and partially disused sewers still exist. A searching

examination is also required into the existence of forgotten cesspools, as well as disused sewers, in such localities as Grafton-street, College-green, Dame-street, Westmoreland-street.

Sewers, in the lower levels of Dublin, under the influence of the tide, back up and leak through cracks and connecting drains, especially during heavy rains occurring at the spring tides; but we are glad to think that this heretofore one of the gravest dangers to the health of Dublin will, under the remedial effect of the now contemplated main drainage system of the Corporation, soon become an experience of the past. Some sewers away from the influence of the tide, with defective gradients, become receptacles for deposits of filth, and have to be cleansed by laborious dredging and bucketing by hand. These sewers must be looked upon as specially dangerous to health both in their congested state and during the process of cleansing. There has been a widespread measure of improvement in the sanitation of Dublin houses since 1880, yet there is abundant evidence that a vast number of the house drains are still in much the same condition as they were when described in 1879—as saturating the basement sub-soil with sewage. In many instances which have come under our notice, the introduction of pipe drains has, by reason of the careless manner in which they were laid, only given a false sense of security to the householders without in any way preventing the saturation of the sub-soil.

Mr. Maguire's report on the subject of typhoid fever, which contains a very clear statement on the subject of connecting drains, having been adopted by the Corporation, there is no need for us to enter into the subject of the defective condition of these drains.

We submit that it is useless to deal in any wholesale way with connecting drains, which really affect the street more than the basement sub-soil, while the house drains themselves are in their present condition. There is no doubt that a large proportion of the house drains in Dublin are built, and are therefore illegal, and of the rest we think that only a small number would stand testing in a thorough manner. It is more important for us to suggest a practical remedy by means of legislation in the form of enlarged powers to the Sanitary Authority for dealing with such evils.

We are of opinion that in Dublin, as in all the suburban townships, it would be a right thing that the Sanitary Authority should be notified of any change of tenancy or occupation of a house, so that a thorough testing of the drains might then be instituted by the Sanitary Authority in order that the new occupant should have a guarantee of the safety of the drains of the house. This notification of the change of occupancy should be compulsory on the landlord. The Corporation should have a sanitary staff to carry out such investigations independently of any investigation which the landlord or occupiers might think fit to make.

We further think that it would be advisable to institute, at any time, a compulsory house-to-house inspection in every street or square in which in two consecutive years more than two houses supplied cases of typhoid fever, with a view of ascertaining the cause of such outbreak, as distinguished from faults in a particular house.

All streets or squares, however, have not got the same sewer throughout their entire extent. Therefore it would perhaps be better, if possible, to arrange the house-to-house inspection on the section of the sewer in connection with the houses in which the cases of typhoid fever had occurred. We have ascertained that in most cases of the recent epidemic of typhoid fever in Dublin, the drains, when properly tested, were found to be faulty.

We think that it is most important that where house drains are tested by the Corporation, the connections between the street sewer and the house drains should also be properly tested and reported on. When we mention the testing of drains we refer to the water test, the smoke test being, in our opinion, unreliable for covered drains, though it may be useful in showing rat-holes, &c.

REPORT ON SUB-SOIL SATURATION.

Ground Water from Tides, Springs, and Disused Wells. By Mr. THOMAS DREW and Dr. GRAVES.

We have gone carefully into the question of ground water, getting samples from wells, used and unused, from various parts of the city. We found on testing the water that most of the samples were polluted with sewerage, some of them to a very great extent (*vide* Statement appended). Two of the wells, however, which were very deep, and were being constantly used, were quite pure. The wells were in most instances full of water up to within four to six feet of the surface. We think it is self-evident that the constant danger arising from a high level of sub-soil water in a city in which the sub-soil is, and has long been, admittedly sewage polluted, makes it imperative on the Sanitary Authorities to take such steps as will remove this potent factor in the causation of typhoid fever in Dublin.[a] This can be effected on the higher levels only by a separate system of drainage, and in the low levels by pumping the water out of the sub-soil, as Trinity College has been forced to do daily since the introduction of the Vartry supply flooded it.

After a careful survey of all the evidence, we find that the level of the sub-soil water is now at a very high point.[b] In some places in the stiff

[a] It must not be forgotten that the leaking sewers and drains have leaked out sewage containing typhoid germs into the sub-soil. Therefore it is easy to understand how a high level of ground water is particularly dangerous in Dublin.

[b] February, 1892.

clay this is not so, but, on the other hand, the exclusion from the house drains, connecting drains, and sewers, of the water which leaks through the street surface, keeps the basement of the houses on clay constantly moist.

The high level of sub-soil water generally is caused by:—

1. *Heavy Rains.*—The past winter has produced floods in various parts of the city by reason of the heavy fall of rain; this flooding has been very marked at the bottom of Grafton-street. The Provost's House at the one side and nearly all the houses at the other side had their basements flooded. A similar flooding and saturation of the foundation a few years ago caused the fall of a house opposite the Provost's (the Trinity College pumping engine gradually drains away these floods from the bottom of Grafton-street).

2. *Tide.*—The spring tides flood the basement of many houses on the gravel area. We have been into cellars which have two feet of water in them at spring tides. This water is full of foul matter, and must tend to impregnate the basement sub-soil with filth.[a]

3. *The Cessation of Pumping of the Wells in the City since the Introduction of the Vartry Water Supply.*—There is the clearest proof that the disuse of pumps since the introduction of the Vartry has, by reason of the overflow of wells supplied by springs, raised the level of the ground water in Dublin. The level of the water in many wells is constantly as high as it can be, the water in them rising until the loose soil near the surface enables the surplus water in the well to escape by leakage into the sub-soil.

4. *The Exclusion of the Sub-soil Water from the Sewers and Drains.*—The exclusion of the sub-soil water from the sewers and drains (which were originally constructed to carry off surface and sub-soil water) is becoming daily more complete as sewers and drains are made watertight. As no adequate drains have been provided for the escape of this water it will, unless a separate system of drainage is provided for it, become a still greater danger to the public health than it is at present.

5. *Waste Vartry.*—Instances of the Vartry water leaking into the sub-soil can be seen in almost any street.

In conclusion, we wish to remark that experience elsewhere has proved that lowering the level of a filth-polluted sub-soil water has led to a great diminution of the death-rate, not only from typhoid fever, but phthisis,[b] and that Dublin may reasonably be expected to benefit by the removal or lessening of the malarial influence which lowers the health and vitality of so many of its inhabitants. Dublin, properly sewered and drained, should take a high rank as a healthy city amongst the large cities in the

[a] It has recently been noticed that when the Danube floods Vienna, the flooding of the house cellars causes an outbreak of typhoid fever.

[b] Strahan. Dublin Journal of Medical Science. November, 1892. The High Death-rate of Irish Towns and its Causes.

British Isles. It is worthy of note that in Dantzig, formerly a pestilence stricken city, *the typhoid fever death-rate was not appreciably affected by the new water supply*, which was completed in 1869. It was not until the new sewerage was completed in 1872 that the typhoid death-rate showed much improvement, the rate averaging 9·9 per 10,000 for a period of years previous to the new sewerage (it was 11·0 in 1871). The improved drainage in 1872 pulled down the rate to 2·9 for the next ten years, while it has fallen to 1·5 for the last six years.[*]

Statement of Analysis of Sub-soil and Well Water.

Date, 1892	Designation	Condition	Nitrates	Ready formed Ammonia, grs. per gallon	Organic Nitrogen, grs. per gallon	
January 29th,	College-green,	Brownish, turbid,	Traces,	0·133	0·016	Very bad
February 9th,	Deep well, kept constantly pumped, Merrion-square	Good, . .	None,	0·002	0·003	Very good
Do. 28th,	Bank of Ireland	Good, . .	None,	Traces	0·003	Very good
Do. 26th,	Up. Ely-place, kept constantly pumped,	Slightly turbid,	None,	0·004	0·005	Fairly good
Do. 26th,	Erne-street,	Turbid, bad,	Traces,	8·084	0·070	Very bad
Do. 29th,	Merrion-square,	Nearly clear,	None,	0·006	0·010	Little contaminated
March 11th,	Custom house, under area of housekeeper's quarters	Very turbid, slightly briny,	Large quantity,	0·028	0·121	Very bad
Do. 11th,	Custom house, surface soil, area of Assay Office,	Turbid, .	Much,	0·018	0·280	Very bad
Do, 16th,	Henry-street, well, constantly used,	Slightly turbid, with fungoid growths,	None,	Traces	0·0196	Unwholesome

CHOLERA.

The *Gazette Médicale de Paris* notes an observation of M. Girode's that cholera and enteric fever may succeed each other in the same subject without apparent interval. M. Gaillard had already reported two similar cases. The fact seems to indicate a common origin of the two diseases. The *Gazette* also notes a caution of M. Girode's as to the use of certain drugs in the internal treatment of cholera. Salol, for instance, which has been recommended on account of its supposed antiseptic properties, is not always absorbed from the stomach, may accumulate there, and induce intense irritation, and even inflammation.

[*] Centralblatt für Gesundheitspflege. 1885. Erster Heft.

THE OXYGEN SEWAGE PURIFICATION PROCESS.

A DEMONSTRATION of this process took place at the Central Criminal Lunatic Asylum, Dundrum, Co. Dublin, on the afternoon of Thursday, August 31, 1893, in the presence of a large number of professional men and others. In explaining the process, MR. W. E. ADENEY, Curator in the Royal University, said:—

You will, I think, more easily understand the process of sewage disposal and purification, which we are about to inspect, if I try and explain the scientific principles on which the treatment is based.

Speaking generally of the great problem of the purification of water-carried sewage, it is only recently that the true principles, upon which all attempts to solve this very difficult problem must depend, have become recognised in their full significance. So long as the question was regarded as a purely chemical one, we can now see that little or no progress was to be expected from the efforts of the older school of chemists to remove the ignorance and doubt that have so long enveloped this great subject, because recent advances in scientific knowledge have shown that they had not at hand the necessary facts and methods of inquiry wherewith to probe to the heart the subject they were called upon to investigate.

It is to the comparatively new and rapidly growing science of bacteriology that the credit of indicating the lines along which investigators must proceed in order to solve this problem is due.

Bacteriologists have proved that agents for the purification of water, when it becomes fouled with such matters as sewage, abound practically everywhere in nature. These agents are minute living organisms, and their method of cleansing consists in changing, by their own life processes, the organic matters of which sewage is mainly composed into certain inorganic matters—viz., carbonic acid, ammonia, nitric acid, and water, which are not only harmless to animal life, but are of considerable importance and value to vegetable life. These minute organisms are quite distinct from the class of pathogenic or disease germs which we have so much reason to dread, and which I fear have brought into evil repute the whole world of micro-organisms.

All here are no doubt aware that there is a large class of organisms, the germs of which are widely distributed throughout nature—in the air, in water, and in the earth's crust. These organisms thrive on dead organic matters, and their normal effect on animal and vegetable life is, as we know by experience, solely a beneficent one. They are known as saprophytic organisms, and it is to them I refer as nature's agents for

cleansing water when it becomes fouled with organic matters such as sewage. I have said that the normal effect of saprophytic organisms in nature is a beneficent one. This statement must, however, be qualified by the reservation—only when their surrounding conditions are such as to promote their healthy life processes. Under unhealthy conditions they assume quite another aspect. They then give rise to certain other changes in the dead organic matters on which they thrive, and possibly they become changed in their own functions. In either case they become more or less a source of grave danger to health.

So far as regards the conditions necessary for the healthy life processes of these organisms, there practically is only one—it is that the organisms shall be supplied uninterruptedly and continuously throughout their whole life histories with oxygen.

I have made these prefatory remarks to emphasise the fact proved by recent advances in science, that nature is abundantly provided with the means of silently but surely changing refuse organic matters such as sewage into harmless forms of matter, in the form of minute organisms, but that these organisms can only effect such changes when the conditions for their healthy life processes exist.

We know by unpleasant experience that under all ordinary conditions sewage presents quite the reverse of favourable conditions for these organisms, and as a result we have the offensive odours so characteristic of it.

The question arises, is it possible to treat water-carried sewage in such a way as to ensure favourable conditions for the healthy life processes of the organisms? Undoubtedly I think it is.

Let me ask you to consider the simplest case of sewage pollution—viz., the discharge of a small bulk of sewage into comparatively very large volumes of running water, *e.g.*, the discharge of the sewage of a small village into a comparatively large river.

It is well known in such a case, even when the river is very sluggish, that all traces of sewage are soon lost sight of, and if anything can be detected by chemical analysis in the water in the lower reaches of the river, it is only the harmless forms of matter into which the sewage has been converted—viz., carbonic acid, water, ammonia, and nitric acid. How is it that in such a case the sewage does not give rise to unpleasant odours or other noticeable unpleasant effects? The explanation is simple. In the first place, all water exposed to the air absorbs a certain quantity of oxygen therefrom, and retains the oxygen dissolved within it. Every 1,000 volumes of good river water, according to the season of the year, contains six to eight volumes of oxygen dissolved in it. In the second place, the number of organisms which will be developed will practically directly depend upon the volume of sewage discharged into the river. In the case I am instancing the sewage will become diluted

enormously with good water before the organisms commence to multiply, and then in no part of the mixture will the organisms develop in numbers too large for the water to supply them with oxygen during their whole life-histories. I have found by experiment, for example, that the Vartry water in the summer season contains sufficient oxygen dissolved in it to maintain healthy conditions to micro-organisms, when it is mixed with ordinary sewage, from which the solid matters had been separated by subsidence, in the proportion of 1 volume of sewage to 50 or 100 volumes of water. I found, after keeping mixtures of 1 volume of sewage and 100 of Vartry water carefully excluded from air for some time, that all trace of sewage had completely disappeared in them, and the only indications left of its former presence were a little carbonic acid and nitric acid, two bodies, as I have already remarked, perfectly harmless to health and beneficial to vegetable life. A short explanation then of the fact that large volumes of river water may be contaminated with small volumes of sewage, and every trace of fresh sewage quickly lost therein, without any intermediate stage of unpleasant odours being set up therein, is that the river water possesses agencies and conditions necessary for self-cleansing. It is only when too much sewage is discharged into river water, and the micro-organisms in consequence become so numerous that they overtax the power of the water to supply them with atmospheric oxygen, that changes in the sewage matters injurious to health are brought about by the organisms.

I think I have said enough to show that these minute organisms in reality constitute the crux of the sewage problem. Under healthy conditions the sewage may be safely left to their unaided efforts; under most circumstances, however, they must be artificially aided. The consideration of how artificial aid may be given leads me at once to the process with which we are particularly concerned to-day, and I will now proceed to give a brief outline of it.

Nearly the whole of the matters in suspension in the crude sewage is first separated by simple mechanical subsidence; the sewage is then subjected to chemical oxidation and precipitation by treatment with one of the most powerful oxidising agents known to chemists—viz., manganate of soda. The organic matters in the sewage and the manganate quickly react upon one another, the greater portion of the former being decomposed into carbonic acid and other harmless bodies, and the brown insoluble peroxide of manganese, which is one of the products of decomposition of the latter, subsides to the bottom of the tank in which the operation is conducted, and carries down with it lighter particles of matter in suspension which escapes subsidence during the first part of the treatment. This peroxide is recovered and used for purposes I shall afterwards explain. The partially purified sewage is subjected to a further precipitation by treatment with sulphate or preferably chloride of alumi-

nium. After this treatment the purified liquid is clear, free from smell, and practically free from suspended matter; the organisms existing in the crude sewage are also largely if not entirely precipitated with the oxides of manganese and alumina; the latter oxide being one of the best agents known to bacteriologists for concentrating and separating micro-organisms from ordinary water. The purified liquid also contains but a very small fraction of the organic matters originally present in the crude sewage. The organic matters, which remain in the liquid, are of such a character that they can only be decomposed and converted into harmless forms of matter on a large scale through the agency of micro-organisms. It will be observed, then, that the object of the process up to this stage is to separate and decompose by precipitation and oxidation as much of the organic matters as possible, and to leave as little as possible for organisms to thrive upon. The subsequent treatment has in view the furnishing of proper conditions for the healthy life processes of colonies of fresh organisms, the germs of which are derived principally from surrounding objects and air, and which I have said can alone effect the decomposition of those organic matters which survive the first part of the treatment. This is effected by adding to the purified liquid small quantities of nitrate of soda, a substance which it has been found the organisms can decompose and from which they can abstract the oxygen necessary for their own healthy life-processes. After this treatment the purified sewage may be discharged into any ordinary outfall—*e.g.*, a river or stream, without any danger of putrefaction being afterwards set up in the waters thereof.

Let us now turn to the deposits of solid matters obtained in the working of the process. Three separate and distinct deposits are obtained:—(1.) the solid matters of the sewage itself; (2.) the peroxide of manganese; (3.) the oxide of alumina mixed with a little peroxide of manganese. It is now only necessary to consider the first mentioned. At the works of this Institution the solid sewage matters obtained from day to day are so small in bulk that no special treatment has been found necessary for them. A novel feature of the process, however, is the means which can be adopted, if it becomes necessary, to prevent organisms from setting up putrification in these solid matters. We have found that the organisms which thrive in these solid matters have the remarkable power of decomposing the recovered peroxide of manganese, above described, and absorbing oxygen therefrom, and that if the sewage solid matters be mixed with a sufficient quantity of this recovered peroxide, putrefaction is prevented in them, during the process of air-drying, the peroxide being partially deoxidised by the organisms and converted into carbonate of manganese.

Viewed from first principles, I think the process which I have outlined can fairly be said to satisfy them. The very valuable properties of manganate of soda are taken advantage of to the full, and we have thereby,

first, an oxidation of much the greater portion of the soluble organic constituents of the sewage, then a precipitating effect caused by the separation of the peroxide, and finally the means of supplying oxygen in the form of this peroxide to the organisms which develop and multiply in the solid sewage matters so long as they remain wet. In addition to this, enough nitrate of soda is added to the purified sewage to ensure a sufficient supply of oxygen to the organisms which continue to develop and multiply. After the organic matters have been completely decomposed, the organisms die down and the liquid becomes perfectly clear. I ought perhaps to add, in conclusion, that the observations I have made are based upon a special study of the subject which my friend, Mr. W. Kaye Parry, and I have for some five or six years past been engaged upon, both in the laboratory and at trial works especially erected for the purpose.

MR. W. KAYE PARRY, M.A., B.E., Univ. Dubl., said that the application of the forces of nature to the requirements of the human race falls to the lot of the engineer, but when he is called upon to put into harness the minute organisms whose functions have been investigated by the researches of chemists and bacteriologists, he is beset by many practical difficulties.

Something has just been said about the life-history of these organisms and the part which they may perform in the reduction of organic matter in sewage and other similar foul liquids, but just as Galvani's fundamental experiment was but the foundation of a science which has found its ultimate application in the numberless developments of electricity, so it is a far cry from the discovery of the friendly microbe to the time when we find him busily engaged in ministering to the wants of the human race.

In applying scientific principles to the problem of sewage purification great difficulties arise, principally on account of the varying character of the liquid with which we have to deal. "Sewage" is a very comprehensive term and is applicable to many liquids which differ greatly in composition. Not only does the character of the liquid vary in different towns according to the nature of the trades and manufactures, but even in the case of any given town the nature of the sewage changes from hour to hour. A sample, for example, collected at mid-day, if analysed is very different to a sample collected at mid-night. So also in the case of an institution, we are called upon to treat a liquid which both in quantity and in chemical composition is constantly changing. At one time the quantity delivered per minute at the works may be ten times as great as another, and perhaps much more foul or much more dilute.

During certain hours of the day the liquid will contain an excess of grease, at another time we may receive a very large proportion of soap. During heavy rains the volume will not only be enormously increased,

but, under certain conditions, may be accompanied by a great quantity of suspended matter. The temperature also undergoes considerable variation, and as chemical changes and bacterial development are both influenced by temperature, these changes are not without effect in the works. Again, the liquid may be acid, neutral or alkaline, and these different states effect the treatment as every chemist can testify.

If the problem of sewage purification consisted in treating a liquid which was uniform in quality, in volume and in temperature, it would not only be possible but comparatively easy in judiciously designed purification works, by the application of the principles set forth by Mr. Adeney, to produce an effluent which would differ but little from an average sample of drinking water. But to secure an ideal effluent under the conditions which obtain in practice is not so easy, for we must so arrange our works that skilled attendance can be dispensed with, and the mechanism employed must be of the simplest character and capable of automatic regulation, so that the process can be left to itself and that a visit once a day by an ordinary labouring man will suffice to keep it in good order.

I will now explain what means we have adopted in order to endeavour to secure the best results.

The sewage from this Institution as it enters the works flows over a water wheel which it keeps in motion, and passes into a deep tank sunk in the ground. It is conducted through a timber trunk to the bottom of the tank, and before it can escape it must rise again to the surface. The heavier suspended particles fall to the bottom, while the gelatinous matter forms a kind of filter which entangles and retains a large percentage of the finer particles, so that from eighty to ninety per cent. of the matter in suspension in the sewage is intercepted in this tank by a purely mechanical process. The clarified liquid then flows under the floor of the tank to a mixing race, the object of which will be described hereafter; the liqnid passes on into tank No. 2, which is similar in construction to No. 1, it is conducted to the bottom as before and then rises to the surface. It then passes out into tank No. 3, through which it is carried in a similar fashion, and finally it flows out of the works and runs away through an open ditch.

We will now return to tank No. 1, in order to see how the chemical reagents are added. I have said that the sewage as it enters the works causes a small water-wheel to rotate, and the velocity of rotation is obviously proportionate to the volume of the sewage. Each revolution of this wheel actuates a valve placed at the bottom of a hopper containing dry manganate of soda, a small quantity of the chemical is released by each revolution, the manganate falls into a little stream of water, and the chemical solution is conducted into the clarified sewage on its way to the mixing-race. The object of the latter is to mix the solution

with the sewage, and after this the treated liquid passes into tank No. 2. The manganate of soda is decomposed, and the brown oxide of manganese is collected in the tank owing to its special form. As the liquid passes into tank No. 3 a solution of sulphate of alumina is added, and the quantity is regulated by an automatic feed, which is also actuated by the wheel already described, and is therefore always in proportion to the volume to be treated.

This alumina is recovered in tank No. 3, and before the effluent leaves the works it received its "dose" of nitrate of soda, the quantity of which is also regulated by the same machinery.

If you have followed this brief description you will observe that the power required for actuating the regulating machinery is obtained from the sewage itself, and that the quantities of all the three chemicals which are added are always directly proportionate to the volume of sewage to be treated.

As regards the matters collected in the three tanks—namely, the crude sewage sludge in No. 1, the oxide of manganese in No. 2, and the alumina in No. 3—they are all withdrawn from the tanks daily in a very simple way. A sludge pipe is fixed in the centre of the timber shoot of each tank, which passes down into a sump. These sludge pipes are connected with wrought-iron closed cylinders, which are fixed on suitable stands. The air is partially exhausted from each of these cylinders by a mechanical contrivance which takes the place of an ordinary air-pump. The stop-cocks on the sludge pipes are then opened and the several deposits pass up into the cylinders.

Beneath each cylinder is a sludge-cock, from which is suspended a canvas sack. When the cylinders are filled the sludge-cocks are opened and the deposits fall into the sacks. The liquids gradually drain away, and are conducted back into the tanks from which the deposits were removed.

When the liquids have drained away the sacks are lifted off.

The sludge from tank No. 1 can be used as a manure, as it contains a considerable amount of ammonia: and the oxide of manganese can, if desired, be used as a deodorising agent, as explained by my colleague.

The man in charge has only to fill the hopper and the two chemical tanks every day and to remove the sludge, an operation which is very rapidly performed.

The machinery for regulating the supply of chemicals has been designed by Mr. James Carson, C.E.

To prevent misapprehension I may state, in conclusion, that, as the pail system is in operation at the Asylum, we do not receive all the sewage of the institution; but you must not infer from this that our difficulties are therefore lessened, and that we are dealing merely with a weak sewage, for the very reverse is the case.

We have on several occasions had samples collected hourly for an entire day, and a portion of the mixed sample analysed, and we find that the sewage is abnormally foul. To enable you to form an opinion on this point, I have put down on the diagram the quantities of free ammonia, albuminoid ammonia, and chlorine contained in the Dundrum sewage, and also the corresponding figures for some other places according to the analysis published by Henry Robinson in his work on sewage disposal. The dry-weather flow with which we are dealing amounts to about 6,000 gallons per day.

ARMY MEDICAL STAFF.

The following is the official list of successful candidates for Commissions in the Medical Staff of Her Majesty's Army at the Examination held in London in August, 1893:—

Order of Merit	Names	Marks	Order of Merit	Names	Marks
1.	Master, A. E.,	2,421	7.	Clark, E. S.,	2,043
2.	Prynne, H. V.,	2,373	8.	Boyle, M.,	2,036
3.	Dansey Browning, G.,	2,271	9.	Fox, A. C.,	2,012
4.	Barnett, K. B.,	2,117	10.	Tibbits, W.,	2,009
5.	Fleury, C. M.,	2,090	11.	Corbett, W. J.,	1,986
6.	Cameron, K. M.	2,050	12.	Green, S. F. St. D.	1,978

"THE PROVINCIAL MEDICAL JOURNAL."

THE July number of this monthly (edited by Dr. T. M. Dolan, and published at Leicester), devotes an editorial to infant mortality in Egypt, comparing it with English rates, which are quite sufficiently appalling. In 101 English towns there are 151 deaths of children under one year of age per 1,000 births; in London, 154; in Staffordshire, 171. In Egypt, in 31 towns, with an aggregate population of 1,002,961, the corresponding rate for 1892 was 263; in 1888, it was 264; in 1889, 293. In the three years 49 per cent. of the children born in these towns died before completing their fifth year. It is admitted that the birth and death rates are not absolutely correct, being based upon the census of 1882; but the numbers of births and deaths are probably accurate. Dr. Pearse's paper—"Illustrations of Desires for Change of Diet in Natives of India and Europeans"—contains a great deal of curious information, as well as many useful hints for dietary treatment. The craving for *onions* in phthisical and "præ-phthisical" patients, of which many instances are given, is very remarkable. Amongst the *Miscellanea* we find the following:—"The total number of women at present studying medicine in the French schools is 229; 122 French, ninety-five Russian, four Roumanian, two English, two Servian, two Bulgarian, one Turkish, one German."

INTRODUCTORY ADDRESS.[*]

By James Craig, M.D., Univ. Dub., F.R.C.P.I.; Physician to the Meath Hospital and County Dublin Infirmary.

Gentlemen,—In accordance with old traditions in this hospital, it is the custom for one of the members of the Medical Board to deliver an inaugural address to the students at the commencement of each Winter Session. This practice, which a few years ago was largely prevalent in London and Dublin, is now showing signs of decay, and already one finds that the teaching staff in not a few of the leading hospitals have abandoned the usage altogether, giving for their reason that the labour involved in writing a suitable address is out of all proportion to the benefit which is derived by the students from its delivery. But the growing dislike to the practice has arisen rather from the unfortunate principle of the rotatory system, by which every teacher in turn becomes the mentor. A man may be a most astute physician, or a bold and skilful surgeon, and still lack the lecturer's art. To few, indeed, is entrusted the rare gift of knowing what are the right things to say on these occasions, and also of saying them with impressiveness and eloquence. When such men are found, whose experience is ripe, whose lives are noble examples, and whose tongues are tipped with fire, to them should be entrusted the duty of arming the youthful knights who are about to join the ranks of those who do battle with disease and death. However, even in the absence of men thus gifted, I am sure we are right in still adhering to the custom of welcoming our students by an annual address, and in setting apart the opening day of the Session to instruct them, not in the theory and practice of medicine and surgery, but by a helpful lesson as to their future work and conduct. And although the law of rotation is the chief plea for my temerity in being the spokesman to-day, I shall endeavour, if you will kindly bear with me, briefly to offer a few hints on matters relating to your student life, for I have passed along the same highway which you are now about to tread; I have "scorned delights and lived laborious days;" I have watched the light in my lamp of hope sink to a feeble flicker; I have tasted the sweets of partial success; I have thrown aside my books, appalled alike with the unending work and the deceit of memory; and I have "gone with the tide in my youthful pride, like a ship without a sail."

But, before I venture to offer you my feeble counsel, will you allow me to speak of certain changes we have to record which should not be passed over. Since our last inaugural address was delivered, the hospital has

[*] Delivered at the opening of the Session of 1893-4, in the Theatre of the Meath Hospital, on Monday, October 2, 1893.

lost the services of a great physician. When Dr. Foot discovered that the physical strain of clinical work was more than he could undertake, the news of his resignation was received with infinite regret, not only by his colleagues here, and by every old pupil whom he had taught within these walls, but also by the entire medical profession in Dublin. If the Meath Hospital has obtained a world-wide renown through the clinical teaching of Graves and Stokes, the fame of the institution which he loves so well has not suffered at the hands of Arthur Wynne Foot; for, as a truthful bedside observer, and a foremost clinical teacher, his name is not unworthy to take rank with these masters as the last of an illustrious trio. At times like these his absence will be sorely felt, for during his twenty-one years of office he delivered the inaugural address no less than seven times, and on each occasion the Theatre was filled with a charmed and spell-bound audience. The students who were privileged to listen to those addresses could never complain of their dulness or want of use. Many a one has heard with pent-up emotion his earnest appeals for devotion to work, and has been filled with fresh resolves to struggle after the high ideals of conduct and action laid down by one whose practice differed not from his preaching. And you will scarcely blame me if I have become so permeated with the truth of his noble teaching, that to-day I will but echo in part the sentiments of one who was to me "scarce other than my own ideal knight." And, indeed, as the successor of Dr. Foot in this hospital, I have no higher ambition than to follow humbly along his industrious path. But the tones of regret in which I have spoken of our loss should be changed to notes of gladness, for we all rejoice to think that one whose true and honest labour has added much to the science of medicine has still many years of quiet but active work before him.

The hospital has further to deplore the loss of Professor Rawdon Macnamara, whose death, in April last, after a few days illness, came like a sudden blow on those who knew him. His funeral, which was conducted with all academic honours from the portals of the College of Surgeons, was attended by such a vast body of his professional brethren and friends, as to be ample evidence in itself of the high esteem in which he was held. For thirty-two years he was connected with this hospital, and, in the words of the *Lancet*, "he was a most conservative surgeon, though a fearless and quick operator, and in the wards was a great favourite with the students. Gifted with an excellent memory, he was, perhaps, one of the most happy retailers of anecdote of his time, and always seemed able to 'cap a good story with a better.' It is no disparagement to even such a profession as is the medical to say, few men in it were so highly educated as was Professor Macnamara. He was a rare linguist, speaking classic Latin, French and Italian, with ease, fluency, and correctness. For a humanity that invoked sympathy with all sorts and conditions of men,

and a rare culture of mind that made him at home among the brightest and most accomplished men of all nations, that secured for him the Honorary Degree of the University of Dublin, the Honorary Membership of the Apothecaries' Hall in Ireland, and the Fellowship of the Medical Society of the University of Christiania, we shall ever regard him alike with affection and admiration."

The vacancy caused by Professor Macnamara's death was filled by the election of one who deserved well of this hospital—one who had already worked in its interests for six years, and whose distinction has been recognised as soon by the public as by the members of his own profession. I allude to my friend Dr. Lennon, whose modesty is only equalled by his ability, and both would be outraged by praise. He is now the Honorary Secretary to the Medical Board, and if you will apply to him in any difficulty you will find him to be a guide, philosopher and friend.

It is only right to tell you that, in filling this surgical appointment by the selection of one who had already won high rank as a physician, the interests of the Meath Hospital were not forgotten.

A spirit of reformation where improvements were needed has ever characterised its management, and so well have our governors done their duty that a few days ago a member of the Corporation described its condition as being "more like a palace than an hospital." Nothing has ever been left undone that could add to the comfort of the sick or the efficiency of the institution, and the latest evidence of this was a thorough overhauling of the drainage system which has just now been completed.

But, if we aim at perfection, it seems to me, and to others as well, that the time is ripe for a further advance—that a change should be made in the direction of a more equal distribution of the medical and surgical staff. Two physicians and six surgeons, it is true, have always manned the hospital; but that is scarcely a sufficient reason to refrain from making an alteration. The additions made to the hospital from time to time have increased both the medical and surgical work; but this would naturally be felt more where the duties are divided between two than where they are distributed among six. Besides, if medicine and surgery are taught on alternate days during a nine months' Session, an easy calculation will show you that the work of instruction is apportioned so unfairly among the staff, that the surgeons off duty begin actually to pine for the class. Again, it has been felt that our accommodation for the treatment and practical teaching of fevers is still inadequate, and that a strong effort should be made to enlarge our present fever buildings. If this were done—and we hope it soon may be done—the number of patients requiring medical treatment would almost be equal to those demanding surgical aid.

For these reasons we hoped that, if the medical staff could be increased at the expense of one from the surgical side, matters might be more fairly

adjusted, and Dr. Lennon might then breathe the purer air of a higher atmosphere with advantage to patients and pupils alike.

It is now my privilege, on behalf of my colleagues and myself, to offer a hearty welcome both to the recruits who come amongst us for the first time this Session, and to those who have been with us in the past. We like to see the old familiar faces once more, but the fresh young ones interest us greatly. Our work as physicians and surgeons to a large hospital is a very responsible one; we have to do our best for the patients, and at the same time look well after the training of our students—and it is with the beginner that the greatest care is required; for, as in the breaking of a colt, if, in the early days of training, he gets frightened, and is not reassured, or if he is allowed to have his own way without proper restraint, vicious habits are contracted which can never be corrected, and which will damage his usefulness for ever after, so in the career of the student of medicine it is very easy for him as a novice to glide into habits of carelessness and get on the wrong lines, which never will bring him to the goal of success. Therefore it is that the teacher's care over the beginner is of such importance.

The choice of medicine as a profession should not be made lightly. I am convinced that in no other calling in life are such demands made on the patience, courage, strength, and sensibilities of the starter as in our own. It is, perhaps, the very noblest profession, but it is also the very hardest. To the beginner, then, I would say, keep up a brave heart, and remember that on the long up-hill road to success the steepest rise is at the start. Do not get disheartened with weary days in the dissecting-room, when the organs of special sense are in revolt, and anatomical names and relations have left the brain in a hopeless muddle. Do not get frightened lest you should never be able to stand the sight of blood. You can do what many have done before you, and time and patience will conquer most dislikes. The late Sir Philip Crampton, "who was for sixty years a surgeon to this hospital, and whose name still stands without a rival in the aristocracy of Irish surgery," was accustomed to cheer the despondent student by the remark that even in his fourth Session the sight of a serious operation had caused him to collapse.

I have already said that the choice of medicine as a profession should not be made lightly. The possession of good health is a qualification of countless value. The calls that are made on the strength of the student should make the weak or delicate pause before entering the lists. In any case I charge you look well after your own health—prevention requires no cure. There is no excuse for getting ill by moping indoors, and no matter how hard your work may be, the taking of exercise is a matter of duty. Nearly all of you are fond of athletics in some form; follow up your particular liking, and stick to it all the more the harder you have to work. If you play football so much the better—it is a winter's game,

and takes up little of your time, and a broken collar bone or a sprained ankle are better companions than indigestion or consumption; besides, there is a much-coveted hospital cup that has adorned our Hall for many years, and some of you may win renown by helping to replace it on its present vacant stand. If you fear the rough usage of the football field, you can join a club of harriers and gain fresh vigour by a weekly run in country air over meadows and ditches. There is plenty of choice—tennis, cycling, rowing, golf, and cricket—enough to suit the most fastidious, and to render it a marvel that advice like this is necessary, but in my short experience I could startle you with the number of classmates, and students since then, I have seen carried off by diseases which could be directly traced to a reckless disregard of the laws of health, or indirectly to a weakened physical condition brought on by want of exercise. It is therefore not idle for me to counsel you to look well after your health, for the seedlings of weakness which are planted in your student days may remain as perennial roots to destroy the full harvest of your after life. The healer of the sick should himself be well. The best medicine in your list of remedies will often be your own bright, cheerful, and hopeful countenance, and it is hard to assume this if the thorn of physical weakness is acting as a constant irritant.

And now let me turn from the subject of play to that of work. You are coming to your studies armed with youth and hope and enthusiasm, and splendid fighting gear they are; but youth is fond of pleasure, and hope may be the seductive whisper which promises that idle days and neglected studies can be made good by future effort, and enthusiasm too may spread itself over much less important objects than daily work. So you see that, in addition to youth and hope and enthusiasm, you will require a more extensive equipment to carry you over the thorny paths of first beginnings, and I cannot do better than here quote to you the advice of Dr. Foot. He says:—

"The youngest here can understand the meaning of the words Earnestness, Industry, Perseverance. Take any one of them and make it mentally your watchword, and it will prove an amulet, or talisman, against idleness, waste of time, slothfulness, and all the snares and toils which beset a student, and, perhaps, especially so a student of medicine. The man who begins the study of medicine with a fixed resolve to work earnestly, industriously, and perseveringly, is more sure of ultimate success than if, unsupported by these principles, he were backed by wealth, rank, and influence. These latter auxiliaries can make a man in a sort of a way, but he is not a real man, and is likely to collapse should any of these props be withdrawn. The principles of earnestness, industry, and perseverance make a real man, the best kind of man—a self-made man, a Napoleon among his fellows, one who will be reliable in danger, fertile in

resource, cool in difficulty, decisive in action, furnished at every turn with the precise weapon he needs."

There is a whole sermon for your reflection put into a few sentences, and from it you cannot fail to gather the attitude and spirit with which you must approach your work.

The subjects set apart for your earlier studies must be thoroughly mastered, and it is only by so doing that you will be able to lay deep and firm the scientific groundwork for the study of the disorders in the structure and functions of the body, which is to be your ultimate special work. Coming to the Medical School with a fair knowledge of Mathematics, you will proceed to Physics and Chemistry, and then pass on to Physiology. And so from Elementary Anatomy you will pass on to that which is more advanced, including Histology, and then on to Pathology; in this way you follow the order of nature, beginning with the less and rising to the more complex sciences, using the lower as a ladder to mount up to the higher. And the further you advance the easier becomes the ascent, but only if each ladder you climb by is strong in its completeness.

Let me implore you, then, not to consider the junior subjects unworthy of anything short of absolute mastery. When you approach Anatomy, which treats of the structure, and Physiology, which treats of the functions, of the body, you have come to the real groundwork of your success in understanding the relations of health and disease. And I must tell you that in proportion as your knowledge of these twin subjects is acquired in the dissecting-room and the laboratory, so will they be of practical use to your after work. Difficult and tedious subjects they both are, but thoroughly they must be learned. It is always a source of grief to me to see a student content to pass with only a disconnected smattering of these radical studies; better far to become qualified in ignorance of signs and symptoms of unusual diseases than to go out into the world and attempt to draw deductions from insufficient premises. You are expected to devote a fair share of your time during three winters to the study of Anatomy, and this is not too much, considering its magnitude and importance, and the constant repetition which it demands; but rather unwisely on the part of the Royal Colleges, their students will be examined on the entire subject at the close of their second year, so that the amount of knowledge derived from the last winter spent in the dissecting-room will be left for their conscience alone to gauge.

If this be an error, a greater one still exists in the case of the sister subject. Trinity College has wisely decided on a two years' course of physiology, while the Royal Colleges are content with one. This is greatly to be regretted, for no Professor in the time at his disposal can possibly cover with his lectures more than one half of the subject. It is right that he should begin with the elementary and easy parts, and accordingly the

more advanced, in which help is needed the most, are left untouched. The student may try his best, but it is a weary task to cull from books alone the facts that are worth remembering. But apart from the fact that the student is left to make up, as best he may, the dry experiments which are often plain enough when seen, I consider that one session is quite insufficient in which to get a complete and useful survey of the hardest subject in the whole curriculum. The result of this one course system is evident in the examinations. The student on whom fate smiles is questioned on the easier matters on which he has also been lectured, and so passes, but he on whom the goddess frowns quickly receives his rejection, and must await his day of luck.

However, you must only endeavour to do your best with the course that is put before you, as a mistake like this can only be altered through time; and besides, unlike anatomy, physiology is a subject which grows so rapidly that any one who strives to keep at all abreast of the times must never cease to read. And if you are not satisfied to remain at the dead level of mediocrity, even though you have failed in your student days to master the abstruse parts of the science, if your knowledge of anatomy be thorough you can pursue with deep interest and profit an after study of the subject. I cannot promise you though, that when you have the many anxieties of practice to distract you, you will feel inclined to go back to studies like these. And here too in Ireland our qualified men suffer from a disadvantage which does not obtain in England. There are no regular post-graduate courses in Dublin, where busy men labouring in the provinces can receive an occasional brushing up. There are few occupations more laborious than that of a hard-worked country doctor, and no matter how much he may wish to increase his information as medical knowledge itself increases his surroundings forbids it; and, therefore, it seems a pity, when many would gladly leave a substitute behind to perform their duties, in order that a month might be spent in the metropolitan schools, that such an opportunity should be wanting.

With regard to the extended period of study which came into force in 1892, the additions which have been made are chiefly in three directions. I do not intend to refer to the vexed question of how you are to spend the extra time at practical work in your fifth year, which will probably have to be settled by your purse. But a course in practical pathology now takes its place as a separate subject. True that in Trinity College such a course had been generously given for a number of years, but it was entirely optional. Now, however, the examinations in this subject, which were formerly of a vaguely theoretical nature, are likely soon to become as practical as is the case in histology. That this is a step in the right direction is very evident, for if we turn our attention alone to the examinations at present held for medical officers in the army and navy what do we find? A microscope is placed on nearly every table, and

besides requiring an intimate knowledge of the specimens placed under these, the various examiners in medicine and surgery give special prominence in every case to the minute pathology of each disease. In fact, pathology is now the subject of greatest importance in all the higher examinations.

Coming to the next advance which is aimed at in the new curriculum, you will find that the subject of Public Health, although nominally included in the former courses, will now occupy a more dignified position in your examinations. This change is one which is highly commendable, and should bear good results. We are living in the days of Preventive Medicine, and so much has already been done in enabling us to cope with the spread of fevers and other infectious diseases by observing the simplest hygienic rules, that a great deal more is to be hoped for in the future, and indeed any marked advance could scarcely have been expected, in view of the fact that so many of our graduates and licentiates received qualifications which covered the merest unpractical smattering of hygienic knowledge. What I wish to emphasise, therefore, is not that this subject has been introduced for the first time, but that more attention will now be directed to the teaching of it, and a fuller acquaintance with it expected at the examinations.

It is necessary, however, to mention in this connection, that a separate Diploma in State Medicine or Public Health has been granted for some years past by Dublin University and by the Royal Colleges, but this in reality has covered little ground. In 1871 Dublin University held their first examination, two of the four candidates on whom the Diploma was conferred being Dr. Foot and Dr. J. W. Moore, but the total number of diplomates since then amount in all but to 56. In 1883 the Royal College of Physicians initiated a like examination, which has been passed by only 26, while the Royal College of Surgeons, making a start in 1888, have now a total of 34 on their roll. At the present time a diploma in this subject, open to graduates and licentiates of a year's standing, can be obtained after passing the necessary examinations from Dublin University, the Royal University, and the Conjoint Board of the Royal Colleges of Physicians and Surgeons.

One might ask, at whose door is to be laid the blame that so few practitioners have thought it desirable or necessary to complete their education in this direction? Chiefly, I should say, at that of the Local Government Board of Ireland, who have all along been content to have medical officers of health appointed without any evidence of special knowledge to entitle them to undertake such posts. In England, on the other hand, the health officers are selected only from those who have taken out a Diploma in Public Health. To those of you, therefore, who in the future may be seeking for appointments in England, and equally so to those who may enter the naval and military medical services, the pos-

session of this qualification will be of great advantage, and, indeed, I hope the time is not far distant when this diploma will take its place on the list of compulsory qualifications.

The third addition which has been made to your studies is likewise one of importance. You are required to produce a certificate for three months' attendance at a hospital for the treatment of mental disease. In bygone days, your examiner might venture at times to set a question or two on the different forms of madness, but to miss or answer these was a matter of like importance. Accordingly, when it came to the turn of the general practitioner to sign a certificate for the removal of a lunatic he found himself greatly exercised in his mind as to what particular form of mental disease he should enter over his signature, and his prescriptions too when it came to a question of treatment were confined to a straight-jacket or a rope. However, that such a state of affairs might continue no longer, the law-makers of your medical education have wisely decreed that in *your* case a systematic clinical course must be taken out in one of the asylums for the insane.

I have endeavoured, in what has already been said, to point out to you the more important studies, which will form your groundwork in mastering the arts of Medicine and Surgery. These subjects are chiefly learned in the College schools, but the art can only be acquired in hospital, and the stress of my remarks to-day should have been mainly directed in impressing you with the truth of the latter.

You are coming here to study disease, or in other words, to learn the art of healing, and it is only in such a place as this, where each and every form of illness and injury are met with, that you can become familiar with the ways of the sick, and attain to such skill in the recognition and management of disease as will fit you for the practice of the Profession of Medicine.

You have here then ample material from which to acquire this knowledge, and as far as your teachers are concerned, I think I may safely promise that there will be no lack of effort on their part to give you the necessary help, so that with yourselves alone will rest the question of your future fitness or failure.

May I tell you by what methods you will ensure some proficiency in your hospital studies? To begin with, remember the quotation which I gave you from Dr. Foot, and then I would ask you to observe habits of strict regularity in attendance, and be among the first arrivals in the morning. Get close to the bedside, and begin at once to use your hands and eyes and ears. Note carefully what is pointed out to you, observing the way your teacher proceeds to obtain the needed information from the patient, and then the methods he adopts in making an examination of the case. You will soon arrive at a stage when a patient who is suffering from a simple ailment will be placed under your own personal charge.

Do not hesitate to ask for one if such a case has not been offered to you, nor refuse to undertake the duty when the offer is made. Lay aside the fear that your ignorance will be ridiculed by the class, or your inexperience discovered by the patient. At first, no doubt, you will feel timid and awkward in your dealings with the sick, and probably shy about reading your notes in the presence of the class, but these, like the shiver of discomfort that the swimmer feels before he takes his morning plunge, are to be met with prompt and decisive action.

This system of case-taking affords the best opportunity for a teacher to do his duty by the pupils. The principle of teaching by action was established in this Hospital by the first of the three great clinical masters whom I have already mentioned, and to prove that his most illustrious colleague, Stokes, was inspired by the value of Graves's system, I have only to quote from one of his lectures. He says—"One word as to the duty of teachers. It is not to convey all the facts of a subject to their hearers, but it is by precept and example to teach them how to teach and guide themselves. If they succeed in this they have done their duty in the largest sense of the word." In insisting, therefore, on your taking up at once the personal charge of clinical cases as the surest road to success, I am not expressing alone my own individual opinion, but I am supported as well by the written authority of those who themselves were kings in the domain of medicine, and also by my own teachers, who for their part never ceased to proclaim its truth by earnest example.

I have met with people who stood on the brink of a frozen pond, and gazed with admiration at the graceful movements of an accomplished skater until the conviction that the art of skating is very simple was only dispelled by a disastrous attempt to imitate them. And I find a parallel to this in the case of the outstanding students in a hospital class who look at the ease with which a skilful teacher uses his hard-earned knowledge in the diagnosis and treatment of disease, and refuse to believe that proficiency in any form is only the result of protracted effort.

Our aim, then, in clinical instruction is to meet you half way. Your part is to be performed by seeing with your own eyes, and gaining with your own hands and ears, as much information as your yet limited talent will allow. While on the other hand, we will endeavour to point out to you the additional facts where your observation has been defective or insufficient. You will quickly find that the subjects you are learning in the schools will be the footlights by which you can have a clear view of the great drama which treats of the recognition and relief of human suffering. And even after you have tried your best in the wards as a mere external pupil, there will still be so much for you to learn that unless you supplement it by coming to reside in the Hospital, or undertaking the duties of Clinical Clerk, you will never know what golden

opportunities you have missed. Inquire from a few who have been fortunate enough to occupy these positions, and you will find their experience and advice will coincide with mine. They will tell you that in this way real interest in their work sprang up to noble proportions, that a self-reliance in face of the worst accidents crept over them, and that their minds became quick in suggesting a proper line of treatment.

In this connection also I would ask you to frequent the out-patient department, where the more trivial ailments are seen. It is these that are oftenest met with in after-life, and you will do well to learn their treatment, and also to familiarise yourselves with the difference between the examination of a patient at the bedside and in the study.

I shall not detain you much longer. You will pardon me if it seems egotistical for one of my years to speak of what your conduct should be. I stand on no lofty platform of superior virtue; but from my place in the student ranks I have seen the qualities that in our chiefs have won all hearts, from that of the sick beggar to the critical leader of society, and, hardest of all to win, that of the members of their own profession. I dare scarcely, then, do less than tell you what to me has seemed most worthy of aim. The character which is formed in your student days will not readily leave you. Strive, then, to keep fresh and green the innocence in which most of you have left the pure atmosphere of home. The antidote to the many temptations which surround you will be found in work, in healthful recreation, and in the charm that some outside hobby will yield you. Idleness is the vice which will lead you into many traps, work is the potion with which you will drug the monster of temptation and win your Golden Fleece. A special hobby for your spare time and tired moments will be to you, as it has been to all men, a haven of rest in which to repair your energies. If you have a taste for art or literature, or mechanics, so long as they do not become the master passion, their indulgence will be to the mind what food and sleep are to the body.

Courage in the face of danger, and a spirit of the highest self-sacrifice are traits so common among our body that their mention here is superfluous. Only the other day we read of a professional brother that "in the memory of Thomas Heazle Parke all Irishmen possess an ideal of what a man should be."

You require to be sympathetic, and if you are not possessed of this quality in a very large degree you must foster carefully what of sympathy you have, and cherish its growth with incessant watchfulness. You have mistaken your calling altogether if you ever become callous or hardened in the presence of suffering.

Your sympathy will show itself best if you are gentle, tender, and kind to your patients—to the poor no less than to those who live in affluence. I know not in what way to express with sufficient force my contempt for the man who has a smiling face for the rich and a biting tongue for the

poor. Never give pain with finger, tongue or manner if you can avoid it. You must, of necessity, at times give pain with your hands, but never let it be done thoughtlessly. Forewarn the sufferer, and then do your part without hesitation. Take up a position of manly independence from which arrogance should be entirely absent. Be no man's creature, if you would preserve the self-respect which alone can win the respect of others. Scorn to trade by methods of humbug on the credulity of human nature. Use no unworthy means in your efforts to succeed, for, though temporary success may follow, you will fail to gain the confidence of those whose opinions you most highly value. Acquire a name for truthfulness—it may do little to increase your banking account, but it is of greater value to the possessor than gold. Aim at that goodness of heart which can appreciate the good qualities, and still make allowances for the shortcomings, of others.

And to those who are about soon to leave this friendly harbour, where they have taken in supplies with which to embark on the voyage of life's work, I would give the additional advice—Endeavour to avoid our besetting sin, which is professional jealousy and backbiting. And I would add to this the words of Whittier—

> "The paths of pain are thine. Go forth
> With patience, trust, and hope;
> The sufferings of a sin-sick earth
> Shall give thee ample scope.
> Beside the unveiled mysteries
> Of life and death go stand,
> With guarded lip and reverent eyes,
> And pure of heart and hand."

ACTION OF MICROBES ON PLANTS.

We learn from the *Gazette Médicale de Paris* that M. Charrin communicated recently to the Académie des Sciences the first results of his investigations of the action of microbes upon plant tissues. Having inoculated the *Bacillus pyocyaneus* into the fleshy leaves of a crassulaceous plant, he found that the mode of action of the microbe is the same in the vegetable as in the animal kingdom. In both there is, first, the effect of the traumatic injury, followed by that of the secreted toxins, and the struggle between these and the anatomical elements with which they are surrounded. The differences between the two cases relate to the means of defence against the pathogenic agent. Chemical defensive action is very much the same in both kingdoms; but in plants mechanical means are more strongly marked and more potent, while in animals the protective action of phagocytes is far superior.

SANITARY AND METEOROLOGICAL NOTES.

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Vital Statistics

For four Weeks ending Saturday, September 9, 1893.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Aug. 19	Aug. 26	Sept. 2	Sept. 9		Aug. 19	Aug. 26	Sept. 2	Sept. 9
Armagh -	21·0	21·0	7·0	7·0	Limerick -	11·2	21·1	14·0	29·5
Belfast -	22·0	25·8	27·1	22·0	Lisburn -	17·0	12·8	34·1	12·8
Cork -	20·8	16·6	18·0	22·8	Londonderry	34·6	18·8	20·4	14·1
Drogheda	17·6	17·6	8·8	17·6	Lurgan -	27·4	13·7	13·7	4·6
Dublin -	26·1	21·5	27·4	21·5	Newry -	16·1	20·1	20·1	4·0
Dundalk -	29·3	12·6	16·8	4·2	Sligo -	0·0	20·3	25·4	0·0
Galway -	30·2	37·8	30·2	3·8	Waterford -	27·5	32·5	30·0	25·0
Kilkenny	33·0	28·3	51·9	14·2	Wexford -	40·6	4·5	22·6	31·6

In the week ending Saturday, August 19, 1893, the mortality in thirty-three large English towns, including London (in which the rate was 22·5), was equal to an average annual death-rate of 22·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·5 per 1,000. In Glasgow the rate was 17·0, and in Edinburgh it was 15·5.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 23·8 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 5·3 per 1,000, the rates varying from 0·0 in Limerick, Galway, Drogheda, Wexford, and Sligo to 14·2 in Kil-

kenny—the 7 deaths from all causes registered in the last-named district comprising 2 from measles and 1 from diarrhœa. Among the 112 deaths from all causes registered in Belfast were 4 from measles, 1 from scarlatina, 1 from typhus, 3 from whooping-cough, 2 from diphtheria, 4 from enteric fever, and 27 from diarrhœa. Of the 22 deaths in Londonderry 1 was from whooping-cough, 1 from diphtheria, and 1 from diarrhœa. The 11 deaths in Waterford comprised 1 from measles and 1 from typhus. The 4 deaths in Lisburn comprised 3 from diarrhœa. The Registrars of Belfast No. 9 District and of Lisburn make reference to the prevalence of English cholera in their respective districts.

In the Dublin Registration District the registered births amounted to 208—108 boys and 100 girls; and the registered deaths to 179—85 males and 94 females.

The deaths, which are 19 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·7 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 26·1 per 1,000. During the first thirty-three weeks of the current year the death-rate averaged 27·2, and was 1·4 under the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 38, being 14 under the number for the preceding week, but 9 over the average for the 33rd week of the last ten years. The 38 deaths comprise 2 from measles, 1 from typhus, 7 from whooping-cough, 9 from enteric fever, 12 from diarrhœa (being 18 under the number from that cause in the preceding week, and 2 below the average for the 33rd week of the last ten years), and 1 from erysipelas.

The number of cases of enteric fever admitted to hospital was 22, being an increase of 3 as compared with the admissions for the preceding week, but 1 under the number for the week ended August 5. Twelve enteric fever patients were discharged, 2 died, and 81 remained under treatment on Saturday, being 8 over the number in hospital at the close of the preceding week.

Seven cases of scarlatina were admitted to hospital, against 9 for the preceding week: 9 patients were discharged, and 49 remained under treatment on Saturday, being 2 under the number in hospital on Saturday, August 12.

Only 1 case of measles was admitted to hospital, and no case of typhus was received. Ten cases of measles and 1 case of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system numbered 19, being 3 over the average for the corresponding week of the last ten years, and 7 over the number for the week ended August 12. They consist of 13 from

bronchitis, 5 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, August 26, the mortality in thirty-three large English towns, including London (in which the rate was 20·8), was equal to an average annual death-rate of 21·6 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·3 per 1,000. In Glasgow the rate was 20·3, and in Edinburgh it was 18·8.

The average annual death-rate in the sixteen principal town districts of Ireland was 22·2 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 5·1 per 1,000, the rates varying from 0·0 in Newry, Dundalk, Drogheda, Wexford, Sligo, and Armagh, to 10·0 in Waterford—the 13 deaths from all causes registered in the last-named district comprising 1 from measles and 3 from diarrhœa. Among the 131 deaths from all causes registered in Belfast were 1 from measles, 3 from scarlatina, 6 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 28 from diarrhœa. The 12 deaths in Londonderry comprised 1 from diphtheria and 3 from diarrhœa. The Registrar of Belfast No. 3 District makes reference to the prevalence of diarrhœa among children: the Registrar of Lisburn remarks:—"Diarrhœa (English cholera) very prevalent; several cases of scarlatina." The Registrar of Belfast No. 9 District states that the epidemic of English cholera and of diarrhœa appears to be subsiding.

In the Dublin Registration District the registered births amounted to 204—97 boys and 107 girls; and the registered deaths to 146—66 males and 80 females.

The deaths, which are 10 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 21·8 in every 1,000 of the population. Omitting the deaths (numbering 2) of persons admitted into public institutions from localities outside the district, the rate was 21·5 per 1,000. During the first thirty-four weeks of the current year the death-rate averaged 27·1, and was 1·1 under the mean rate in the corresponding period of the ten years 1883-1892.

The number of deaths from zymotic diseases registered was 38, being equal to the number for the preceding week, and 12 over the average for the 34th week of the last ten years. The 38 deaths comprise 1 from influenza, 3 from whooping-cough, 1 from diphtheria, 3 from enteric fever, 4 from simple cholera and choleraic diarrhœa, 23 from diarrhœa (being 11 over the number from that cause in the preceding week, and 10 above the average for the 34th week of the last ten years). Twenty of the 23 deaths from diarrhœa were of children under 5 years of age, 12 being infants under 1 year old.

The number of cases of enteric fever admitted to hospital was 19, being a decrease of 3 as compared with the admissions for the preceding week: 17 enteric fever patients were discharged, 1 patient died, and 82 remained under treatment on Saturday, being 1 over the number in hospital at the close of the preceding week.

Six cases of scarlatina were admitted to hospital, against 7 for the preceding week: 7 patients were discharged, and 48 remained under treatment on Saturday, being 1 under the number in hospital on Saturday, August 19.

The hospital admissions for the week included, also, 8 cases of measles. Thirteen patients suffering from measles remained under treatment on Saturday, being an increase of 3 as compared with the number in hospital at the close of the preceding week. No case of typhus was under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system numbered only 11, being 8 below the average for the corresponding week of the last ten years, and also 8 under the number for the week ended August 19. They consist of 6 from bronchitis, 4 from pneumonia or inflammation of the lungs, and 1 from corup.

In the week ending Saturday, September 2, the mortality in thirty-three, large English towns, including London (in which the rate was 19·0), was equal to an average annual death-rate of 20·6 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·7 per 1,000. In Glasgow the rate was 21·5, and in Edinburgh it was 20·4.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 25·3 per 1,000 of the population, based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 6·9 per 1,000, the rates varying from 0·0 in Dundalk, Drogheda, Wexford, Lurgan, Sligo, and Armagh, to 23·6 in Kilkenny—the 11 deaths from all causes registered in the last-named district comprising 1 from measles and 4 from scarlatina. Among the 138 deaths from all causes registered in Belfast were 6 from measles, 2 from whooping-cough, 5 from enteric fever, and 38 from diarrhœa. The 26 deaths in Cork comprise 1 from whooping-cough, 1 from enteric fever, and 1 from diarrhœa. Two of the 13 deaths in Londonderry were from measles. Of the 12 deaths in Waterford 1 was from scarlatina, 1 from typhus, and 1 from diarrhœa. The 8 deaths in Galway comprise 2 from typhus and 1 from diarrhœa. The 8 deaths in Lisburn comprise 3 from diarrhœa.

In the Dublin Registration District the registered births amounted to 203—105 boys and 98 girls; and the registered deaths to 195—94 males and 101 females.

The deaths, which are 22 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 29·1 in every 1,000 of the population. Omitting the deaths (numbering 11) of persons admitted into public institutions from localities outside the district, the rate was 27·4 per 1,000. During the first thirty-five weeks of the current year the death-rate averaged 27·1, and was 1·1 under the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 57, being 19 over the number for the preceding week, and 20 over the average for the 35th week of the last ten years. The 57 deaths comprise 1 from measles, 3 from influenza and its complications, 5 from whooping-cough, 6 from enteric fever, 1 from choleraic diarrhœa, 34 from diarrhœa (being 11 over the number from that cause in the preceding week, and 14 above the average for the 35th week of the last ten years), 2 from dysentery and 1 from erysipelas. Twenty-seven of the 34 deaths from diarrhœa were of children under 5 years of age, 22 being infants under 1 year old.

The number of cases of enteric fever admitted to hospital was 45, being an increase of 26 as compared with the admissions for the preceding week. Nine enteric fever patients were discharged, 2 died, and 116 remained under treatment on Saturday, being 34 over the number in hospital at the close of the preceding week.

Eight cases of scarlatina were admitted to hospital, being 2 over the admissions for the preceding week: 7 scarlatina patients were discharged, and 49 remained under treatment on Saturday, being 1 over the number in hospital on Saturday, August 26.

The hospital admissions for the week included, also, four cases of measles. Fourteen cases of the disease remained under treatment in hospital on Saturday.

Only 11 deaths from diseases of the respiratory system were registered, being equal to the low number for the week ended August 26, and 10 below the average for the corresponding week of the last ten years. They comprise 5 from bronchitis and 5 from pneumonia or inflammation of the lungs.

In the week ending Saturday, September 9, the mortality in thirty-three large English towns, including London (in which the rate was 18·9), was equal to an average annual death-rate of 20·1 per 1,000 persons living. The average rate for eight principal towns of Scotland was 20·8 per 1,000. In Glasgow the rate was 21·7, and in Edinburgh it was 18·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 20·4 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixte

districts were equal to an annual rate of 5·5 per 1,000, the rates varying from 0·0 in eight of the districts to 8·7 in Belfast—the 112 deaths from all causes registered in that district comprising 2 from measles, 8 from whooping-cough, 1 from diphtheria, 1 from enteric fever, 30 from diarrhœa, and 2 from English cholera. Among the 33 deaths from all causes registered in Cork are 1 from enteric fever and 8 from diarrhœa. The 21 deaths in Limerick comprise 2 from measles and 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 180—84 boys and 96 girls; and the registered deaths to 147—76 males and 71 females.

The deaths, which are 18 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 21·9 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 21·5 per 1,000. During the first thirty-six weeks of the current year the death-rate averaged 27·0, and was 1·1 below the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 40, being 6 over the average for the 36th week of the last ten years, but 17 under the number for the week ended September 2. The 40 deaths comprise 2 from measles, 4 from whooping-cough, 5 from diphtheria, 8 from enteric fever, 2 from cholerine, 19 from diarrhœa (being 15 under the number from that cause in the preceding week), and 1 from erysipelas. Sixteen of the 19 deaths from diarrhœa were of children under 1 year old.

Fifty-eight cases of enteric fever were admitted to hospital against 45 admissions for the preceding week, and 19 for the week ended August 26. Twelve enteric fever patients were discharged, 3 died, and 159 remained under treatment on Saturday, being 43 over the number in hospital at the close of the preceding week.

The number of cases of scarlatina admitted to hospital was 6, being a decline of 2 as compared with the admissions for the preceding week: 7 patients were discharged and 48 remained under treatment on Saturday, being 1 below the number in hospital on Saturday, September 2.

The hospital admissions for the week included, also, 12 cases of measles, being an increase of 8 as compared with the admissions for the preceding week: 21 measles patients remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system numbered 13, being 2 over the low number for the preceding week, but 5 under the average for the 36th week of the last ten years. They consist of 9 from bronchitis and 4 from pneumonia or inflammation of the lungs.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of August,* 1893.

Mean Height of Barometer, - - -	29·965 inches.
Maximal Height of Barometer (on 29th, at 9 a.m.), -	30·396 „
Minimal Height of Barometer (on 21st, at 9 a.m.), -	29·290 „
Mean Dry-bulb Temperature, - - -	61·3°.
Mean Wet-bulb Temperature, - - -	57·9°.
Mean Dew-point Temperature, - - -	55·1°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·437 inch.
Mean Humidity, - - - - -	80·4 per cent.
Highest Temperature in Shade (on 15th), - -	79·8°.
Lowest Temperature in Shade (on 26th), - -	47·9°.
Lowest Temperature on Grass (Radiation) (on 28th)	41·6°.
Mean Amount of Cloud, - - - -	54·0 per cent.
Rainfall (on 16 days), - - - -	2·713 inches.
Greatest Daily Rainfall (on 18th), - - -	·516 inch.
General Directions of Wind, - - -	S.W., N.W.

Remarks.

Although changeable, as in 1892, and forming no exception to the rule that August is characterised by heavy rains, this was a record month as regards high temperature. On no fewer than 14 days did the thermometer exceed 70° in the shade, and the mean temperature was one degree above that of August, 1871, when it reached 62°. The present month also is remarkable for the magnificent display of lightning which occurred on the evening and during the night of the 9th. The cyclonic depressions, which are periodic in the last week of August, arrived about a week earlier than usual, the barometer falling to 28·80 inches off the west coast of Scotland on the 21st.

In Dublin the arithmetical mean temperature (63·0°) was much above the average (59·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 61·3°. In the twenty-eight years ending with 1892, August was coldest in 1881 (M. T. = 57·0°), and warmest in 1871 (M. T. = 62·0°). In 1885, the M. T. was only 57·1°; in 1879 (the "cold year"), it was 57·7°; in 1887, 60·3°; in 1888, 58·2°; in 1889, 58·6°; in 1890, only 57·2°; in 1891, 58·1°, and in 1892, 60·0.°

The mean height of the barometer was 29·965 inches, or 0·068 inch above the corrected average value for August—namely, 29·897 inches. The mercury marked 30·396 inches at 9 a.m. of the 29th, and fell to 29·290 inches at 9 a.m. of the 21st. The observed range of atmospherical pressure was, therefore, 1·106 inches—that is, a little more than an inch and one-tenth.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 61·3°, or 3·7° above the value in August, 1888 and 1889, 5·0° above that in 1890, 4·1° above it in 1891, and 2·3° above it in 1892. It was also 0·8° above the value for July, 1893. Using the formula, *Mean Temp.* =*Min.* + (*max.*—*min.* × ·47), the mean temperature was 62·6°, or 3·3° above the average mean temperature for August, calculated in the same way, in the twenty-five years, 1865–89, inclusive (59·3°). The arithmetical mean of the maximal and minimal readings was 63·0°, compared with a twenty-five years' average of 59·7°. On the 15th the thermometer in the screen rose to 79·8°—wind, light and variable; on the 26th the temperature fell to 47·9°—wind, N.W. The minimum on the grass was 41·6° on the 28th.

The rainfall was 2·713 inches, distributed over 16 days. The average rainfall for August in the twenty-five years, 1865–89, inclusive, was 2·825 inches, and the average number of rainy days was 15·5. The rainfall, therefore, was slightly below average, while the rainy days were slightly in excess of the average. In 1874 the rainfall in August was very large—4·946 inches on 18 days; and in 1868 also 4·745 inches fell on, however, only 13 days; but the heaviest downpour in August occurred in 1889, when 5·747 inches were registered on 22 days. On the other hand, in 1884, only ·777 inch was measured on 8 days. In 1887, 1·520 inches of rain fell on 16 days; in 1888 1·270 inches on 12 days; in 1890, 2·799 inches on 19 days; in 1891, 4·953 inches on 25 days, and in 1892, 3·557 inches on 22 days.

High winds were noted on as many as 10 days, and attained the force of a gale on three occasions—namely, the 4th, 20th, and 21st. A thunderstorm of great severity occurred on the 9th. Thunder was also heard on the 18th. Lightning was also seen on the 13th and 18th. Temperature reached 70° in the screen on as many as 14 days. Hail fell on the 18th. It was foggy on the 12th, 13th, and 14th.

The weather remained changeable and showery, with fresh westerly (S.W. to N.W.) winds, throughout the period ended Saturday, the 5th. A new disturbance reached our northwest coasts on Tuesday, the 1st, leading to rain without much wind. On Wednesday afternoon, however, the barometer fell briskly and the wind backed to S.W. and freshened with a threatening appearance as a much more decided depression approached the N.W. of Ireland from the Atlantic. This system was quickly followed by another on Thursday night, so that by Friday the weather was thoroughly broken, squally and showery, in all parts of the United Kingdom. On the afternoon of this day thunderstorms and heavy rains occurred in London and many other places. A brisk recovery of pressure now took place and the wind drew towards N. and moderated, with fine, dry weather on Saturday. In Dublin the mean height of the barometer for the week ended Saturday, the 5th, was

29·861 inches, pressure ranging between 29·534 inches at 9 a.m. of Friday (wind, W. by S.) and 30·068 inches at 9 p.m. of Saturday (wind, N.). The corrected mean temperature was 60·4°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 58·8°. The screened thermometers rose to 71·3° on Friday and fell to 52·4 on Tuesday. The rainfall was ·813 inch on five days, ·270 inch being measured on Wednesday. The prevailing wind was N.W. Changeable, but very warm and generally summerlike weather characterised the week ended Saturday, the 12th. On Wednesday and Thursday thunderstorms of quite exceptional intensity raged over many parts of England and Ireland, extending subsequently to parts of Scotland also. In Ireland, the distribution of atmospherical pressure was cyclonic, except on Tuesday and Saturday, when a continental anti-cyclone spread westwards as far as this country. As the general direction of the wind in the British Islands was southerly, temperature ranged very high—the thermometer rising to 85° or 86° at the inland English stations on Tuesday and Wednesday—even at Holyhead a maximum of 83° was reached on Wednesday. The highest in Paris on this same day was 91°. This tropical heat was the more remarkable, as the week commenced with very low temperatures, indeed, the minima recorded on Sunday morning were 46° in London and at Oxford, 44° at Leith, 43° at York, Loughborough, and Ardrossan; 42° at Sumburgh Head, 41° at Wick and Aberdeen, 40° at Stornoway, and 38° at Nairn! But the most striking phenomenon of the week was the violent thunderstorm of Wednesday night. In Dublin the lightning, which was almost incessant from dusk until after midnight, was extraordinarily vivid. The storm passed from S.S.E. to N.N.W. directly over the city between 10 and 11 p.m., in which time a quarter of an inch of rain fell. The mean height of the barometer was 29·951 inches, pressure ranging between 29·806 inches at 4 p.m. of Thursday (wind, S.E.) and 30·136 inches at 9 p.m. of Saturday (wind, S.). The corrected mean temperature was 65·5°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 63·8°. On Friday the screened thermometers rose to 77·7°, having fallen to 53·0° on Sunday. The rainfall was ·460 inch on four days, ·250 inch being recorded on Wednesday. The prevalent winds were S.W. and S.E.

Many years have passed since such really tropical heat has been experienced in Spain, France, and the British Isles, as that which has made the week ended Saturday, the 19th, memorable in meteorological annals. At Rochefort, on the west coast of France, the daily maxima were 102°, 106°, 91°, 93°, 100°, 90°, and 81°. In London the corresponding values were 81°, 85°, 87°, 90°, 92°, 93°, and 78°. On Thursday night the thermometer did not sink below 72° in London, and by 8 a.m. of Friday it had already risen to 84°. Even in Dublin a maximum of 79·8° was recorded on Tuesday, the 15th—this being the highest shade tempera-

ture registered in the Irish capital since July 16, 1876, when the phenomenal reading 87·2 was attained. On Tuesday the maximum at the Ordnance Survey Office, Phœnix Park, was 82·0°; at Glasnevin Botanic Gardens it was 80·6°. Only on the nights of Tuesday and Friday did the minimum fall below 60°. On every day the maximum exceeded 70°. There was an anticyclonic distribution of atmospherical pressure over western Germany, France, England, and Ireland until Thursday, when isobars became cyclonic and decided gradients for southerly winds formed over all parts of the United Kingdom. Thunderstorms of some severity occurred in the North of Ireland and the northern half of Great Britain on Tuesday night, while drenching showers of rain and hail fell in and about Dublin on Friday, accompanied by thunder. It is noteworthy that the weather was quite cool in Scandinavia throughout the week. In Dublin the mean height of the barometer was 29·965 inches, pressure ranging from 30·170 inches at 9 a.m. of Monday (wind, S.S.E.) to a minimum of 29·627 inches at 9 p.m. of Saturday (wind, S.). The corrected mean temperature was 67·9°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 66·6°. On Tuesday, the shade thermometers rose to 79·8°; on Saturday they fell to 58·1°. The rainfall was ·696 inch on two days ·516 inch falling in heavy showers on Friday, when some hail also fell. The prevailing wind was S.S.W. A good deal of fog hung about the coast on Sunday and Monday. The rainfall at Greystones, Co. Wicklow, was 1·035 inches on two days. The mean temperature of this week was 73·1° in London, 71·8° at Cambridge, 71·5° at Oxford and Loughborough, 70·5° at Southampton, 70·3° in Manchester, and 70·1° even at Scarborough on the sea.

Opening with typical cyclonic conditions and rough, rainy weather, the week ended Saturday, the 26th, closed with equally well-marked anticyclonic conditions and fine, quiet weather. On Sunday morning a large depression was found off the N.W. of Scotland. This system had caused a heavy rainfall during the previous night in most parts of Ireland and in some parts of Scotland. A few hours later a much more serious disturbance advanced towards the N.W. of Ireland from the S.W., causing a renewed and still heavier rainfall and moderate to fresh gales from S., S.W., and W. at several exposed stations. By 8 a.m. of Monday the barometer was down to 28·90 inches in Donegal, and by 6 p.m. a minimal reading of 28·83 inches was reached at Wick, in Caithnessshire. During the next three days the arrival of several shallow secondary depressions kept the weather in an unsettled, showery state. On Thursday, however, an area of high pressure began to spread over our south-western districts and the N.W. of France, and this brought cool, dry N.W. winds and finer and brighter weather. Towards the close of the period the nights became very sharp, the thermometer in the screen falling on Friday night to 47·9° in Dublin; 46·0° in London, as well as

at Wick, Belmullet, and Oxford; and 41·0° at Parsonstown. In Dublin the grass minimum was 41·7°. In Dublin the mean height of the barometer was 29·887 inches, pressure ranging from 29·290 inches at 9 a.m. of Monday (wind, W.S.W.) to 30·343 inches at 9 a.m. of Saturday (wind, N.W.). The corrected mean temperature was 59·6°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 57.9°. On Sunday the thermometer rose to 68·6°; on Saturday it fell to 47·9°. The mean temperature was 8·3° lower than that of the previous week. Rain was measured on four days to the amount of ·718 inch, ·390 inch being entered to Sunday. The prevailing winds were first S.W., then N.W.

The last five days of the month were uneventful but favourable. An anticyclone of considerable intensity for the time of year lay throughout over Ireland and the Atlantic to the westward of this country. The weather was at first bright and cool, with northerly winds; but the sky afterwards became densely clouded, and on Thursday, the 31st, some rain fell with a N.W. wind. Temperature showed some recovery on this the closing day of the month.

The rainfall in Dublin during the eight months ending August 31st amounted to 14·379 inches on 108 days, compared with 9·455 inches on 96 days during the same period in 1887, 17·264 inches on 121 days in 1888, 18·893 inches on 134 days in 1889, 18·386 inches on 137 days in 1890, 15·888 inches on 117 days in 1891, 17·279 inches on 131 days in 1892, and a twenty-five years' average of 17·558 inches on 128·1 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in August, 1893, was 3·275 inches distributed over 16 days. Of this quantity ·690 inch fell on the 19th. The total fall since January 1 amounts to 16·341 inches on 106 days, compared with 21·296 inches on 108 days in 1892.

DURATION OF HUMAN PREGNANCY.

THE *Gazette Médicale de Paris* notices a case reported in the *Centralblatt für Gynäkologie*, in which conception occurred four days after parturition, and normal delivery was accomplished 243 days afterwards. In commenting on this remarkable case M. Döderlein stated that, desiring to test the ordinary opinion that the average duration of pregnancy is 280 days from last menstruation and 273 days from fecundation, he had collected statistics of 1,500 deliveries at term. He concluded that the normal duration of pregnancy oscillated between 40 and 44 weeks, but that in the great majority of cases the period is 40 weeks. Pregnancies terminating at the end of the thirty-sixth and of the forty-fourth week are about equally numerous. These latter cases, however, are probably reducible to the normal 40 weeks. Pregnancies of 37, 38, 39, 41, 42, or 43 weeks' duration are comparatively rare.

PERISCOPE.

THE APOLLINARIS SPRING.

H. S. H. THE DUCHESS OF TECK and suite, who are staying at Bad Neuenahr, visited the neighbouring Apollinaris Spring on Friday, August 11. Her Royal Highness was conducted through the premises, and was much interested in watching the various operations of filling, corking, labelling, and packing the Apollinaris natural mineral water. The duchess was much impressed with the very large amount of carbonic acid gas contained in the spring, and proceeded for a few steps down toward the sunken courtyard in which the spring issued from the ground, in order to experience the effect of the gas. She afterwards caused her son, Prince Alexander, and her suite to do the same, in order to convince themselves of the volume and density of the carbonic acid gas there accumulated.

THE RÔLE OF THE POSTERIOR URETHRA IN CHRONIC URETHRITIS.

IN a paper read by Dr. Bransford Lewis, of St. Louis, before the June meeting of the American Association of Genito-Urinary Surgeons (*Medical Record*, June 29, 1893), the author presents some very radical and unorthodox views on the frequency of posterior urethritis and its influence in the production of chronic gonorrhœas. The various causes commonly accepted as sufficing to explain persistence in gonorrhœa were reviewed, and their potency as such were denied *seriatim*. Two cases were reported showing that the presence or absence of the gonococcus alone could not form a reliable criterion as to prognosis:—Case I. (primary), with abundant gonococci containing discharge, lasted six weeks; while Case II. (secondary), also giving abundant gonococci containing discharge, lasted only one week. The influence of anatomical abnormalities was restricted to only a small minority of the exceedingly numerous cases of chronic gonorrhœa, and did not explain the great number that occurred. The several varieties of urethritis, such as "granular urethritis," "catarrhal urethritis," "hypertrophic urethritis," &c., were only pathological incidents, not causes, of chronic gonorrhœa, and even on discriminating between these several varieties, the question still obtruded itself: What was it that had produced that particular variety? Again, urethral therapeutists, with ardently-advocated new remedies, supposed to be specifics, had all in turn failed in their endeavours to abolish prolonged claps. So that it must be acknowledged that the various factors to which chronic urethritis was usually attributed, while relatively important in a contributory way, did not cover

the ground in actual clinical experience, and something else must be found to bear the onus of being a prolific source of chronic gonorrhœa. While aware that infection of the posterior urethra was almost universally recognised, by advanced practitioners of the present day, as a complication of gonorrhœa that was difficult to cure when it did occur, that interfered with the usual course of treatment employed, and required special measures for its relief, &c., the author does not believe that the full importance of posterior inflammation is generally realised; that its frequency is even approximately estimated in general, or that its bearing on almost every case of gonorrhœa is understood, recognised, or acknowledged. In Dr. Lewis' opinion, the posterior infection should not be looked upon as a complication, but as a natural feature, occurring with such unfailing regularity that an observer, watching carefully and critically gonorrhœal cases, must see a great many of them before he would meet with a single one that remained free from the so-called complication throughout the disease. This conclusion, to which clinical investigation has led him, is supported, in recent writings, by the following statistics of authors who had been pursuing a similar study of late years. Lesser asserted that of fifty-three cases of primary gonorrhœa under his care, the posterior urethra escaped infection in only four cases, making the frequency of posterior urethritis 93·5 per cent. Jadassohn found posterior urethritis in 143 of 163 cases, making 87·7 per cent.; Róna found it in 79·7 per cent. of his cases; and Eraud found it in 80 per cent. of all of his cases. In endeavouring to harmonise this undoubted fact of frequency of posterior urethritis with the reason for its frequency, the author disregards, as inapplicable, explanations usually given. Sexual intercourse, the "forced" injection, the passage of instruments, &c., during an active gonorrhœa, were chiefly complained of by writers on the subject—extremely seldom by the patients themselves. Bearing on this point, the time and mode of onset of the posterior inflammation was of importance. Instead of the inflammation progressing slowly and gradually backwards over the urethral mucous membrane and reaching the posterior urethra in the second or third week, as was commonly taught, it reached the posterior urethra, in most cases, in the first (active) week of the disease. This rather favoured the supposition of Horteloup that the mode of infection was through the lymphatics rather than by continuity over the mucous surface. The author, therefore, feels justified in submitting the following conclusions:—1. The causes usually given for the prolongation of cases of clap (presence or absence of gonococci, stricture of large calibre, the use of particular drugs in treatment, &c.) do not satisfactorily explain them, nor do they furnish reliable means for prognosticating the outcome of a case. 2. A single widely prevalent cause for such prolongation of gonorrhœa has, as yet, not proved its right to recognition as such. 3. Posterior urethritis, by reason of its anatomical seclusion and

inaccessibility to ordinarily-prescribed treatment, if frequent, offers the best explanation for such prolongation or repeated recurrence. 4. Scrutinising clinical investigation shows posterior urethritis to be present in the great majority of cases of prolonged or severe gonorrhœa. 5. Direct, topical treatment to the posterior urethra is, therefore, necessary in the great majority of cases. 6. The causes usually given for producing posterior urethritis are not commonly found to be real factors in the clinic. 7. The mode of onset usually described does not coincide with that discerned in clinical observations. 8. These two latter observations confirm the probability that the posterior urethral infection is accomplished through the lymphatics, and explain the frequency of such infection. 9. Posterior urethritis is not a complication, but a natural phenomenon of gonorrhœa.

TOLYSAL.

TOLYSAL (salicylate of the paratolydimethylpyrazon) occurs in the form of light rose-coloured crystals, possessing a bitter astringent taste, slightly soluble in water, sparingly soluble in ether, but freely soluble in alcohol and acetic ether. Tolysal is non-toxic. Henning found no bad effects from it when given in large quantities to rabbits and guinea-pigs. He obtained good results from it in articular rheumatism, acute and chronic muscular rheumatism, phthisis, and diphtheria. He formulates his views thus:—(1) Give from 45 to 90 grains daily, commencing with a 30-grain dose and giving 15 grains every hour afterwards until the 90 grains are taken or the pain relieved. (2) Continue the treatment for a few days after the pain has disappeared. (3) For neuralgia a single dose of 15–30 grains is sufficient to relieve the pain. (4) As an antipyretic its properties are well-marked. It should be commenced with a 30-grain dose and followed by 15-grain doses every hour until the effect is produced. (5) It diminishes the frequency of the pulse and respirations. (6) The temperature falls to its lowest one hour after the administration of the dose, and the effect remains for an unusually long time. (7) On healthy persons the antipyretic effect of tolysal is very slight. (8) As an antirheumatic remedy, its effects are equally good with the most approved. (9) Tolysal is not accumulative. (10) It is possessed of hypnotic properties both in febrile and non-febrile affections. (11) Tolysal is an antizymotic and an antiseptic. (12) It is superior to quinine, kairin, salicylate of sodium, antipyrin, antifebrin, sulphate of thallin, phenacetin, agathin, and all other such remedies. Unfortunately tolysal has its drawbacks, and they are numerous: buzzing in the ears, heaviness, pains in the stomach, nausea, vomiting, rigors pending the elevation of temperature, cyanosis, dyspnœa, prolonged and exhausting sweats, deafness, muscular tremors, diarrhœa, rashes, collapse, and psychical troubles.—*Les Nouveaux Remèdes*, No. 9.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XI.—*Dur-hæmatoma associated with Jacksonian Epilepsy.*[a]

By JOHN EUSTACE, jun., M.B., B.Ch. (Univ. Dub.), M.P.C.; Assistant Medical Superintendent, Hampstead and Highfield Private Asylums; late Clinical Assistant, Royal Asylum, Morningside, Edinburgh; and ALFRED R. PARSONS, M.B., B.Ch. (Univ. Dub.), M.R.C.P.I.; Assistant Physician to Sir Patrick Dun's Hospital.

Clinical History.—Mr. X. was admitted to Hampstead in September, 1888. He was twenty-eight years of age, unmarried, and a farmer by occupation. With the exception of an uncle, who died of syphilitic general paralysis of the insane, there is no family history of insanity in either direct or collateral branches. Father and mother are both living; the former suffers from paralysis agitans. One sister has occasional attacks of hysteria.

It is certain that the patient was not addicted to alcohol or sexual excess, nor had he contracted syphilis. There was a vague history of a blow on the head when a child, but at the time it was not considered necessary to call in a doctor, and neither during life nor after death could we discover a scar.

For about a year prior to admission Mr. X. appears to have suffered from *petit mal*, and was treated with bromide by the family physician. His friends did not consider him insane until the week before admission, when he commenced to plan and build a house on a magnificent scale.

[a] Read before the Section of Pathology of the Royal Academy of Medicine in Ireland, Friday, March 24, 1893.

Sandringham was taken as a model, and artificial lakes, acres of gardens, huge glass-houses, and expensive plantations figured in the design. He was engaged to be married, and when remonstrated with explained that he thought nothing too good for his wife.

The immediate cause of his being sent to Hampstead was that he made an attempt to stab his sister with a pruning knife. Drs. Dobbs and Evans signed the certificates, and I am indebted to them for the previous history of the case.

On admission his condition was diagnosticated as simple mania. He was intensely happy, very garrulous, pleased with his surroundings, and did not appear to find the restraint of asylum-life irksome. He was vain of his personal appearance, and boastful to absurdity of his strength and of his hunting exploits. However, he was sufficiently sane to be permitted to roam about the grounds and farm by himself, and to ride and drive accompanied by an attendant. The physical examination proved that he was in excellent bodily health, and that all his viscera were normal.

During October he had three attacks of *petit mal*, and the riding was discontinued.

In November he had his first true convulsive seizure. It occurred when he was playing billiards, and he had no premonitory symptoms, but, turning pale, suddenly fell on the floor, and had a general convulsion. It was observed by the attendants that the *left* arm and leg worked more violently then the right. He was at once put to bed, and when seen was in the comatose stage. Temperature, 101° ; pulse, 98, very full and bounding. The *left* side, and particularly the arm and leg, were bloodless, cold, and paralysed.

Dr. Arthur Wynne Foot saw him several times in consultation with my father, and the probability of the existence of a tumour affecting the right hemisphere of the brain was discussed, but the signs were not deemed sufficient to warrant operative interference. Dr. Swanzy examined his eyes, but could detect nothing abnormal.

Similar attacks to the one I have described occurred during the next two years, on an average once a fortnight, but sometimes two or three fits would occur in the same week. Brown-Séquard's bromide mixture, though pushed till acne appeared, did not give relief, but the patient himself had great faith in antipyrin tabloids (gr. v.), and as the case progressed and subjective premonitory symptoms set in, such as headache, a feeling of anxiety, formication in the left hand, &c., in addition to obvious flushing and tremors, he believed that he frequently warded off an attack by swallowing a tabloid, or by tying a string round his left wrist. He also believed that sitting near a fire or in a very warm room induced an attack, and as a matter of fact under those circumstances he frequently had a fit. Several points are noteworthy in connection with the seizure:—

(1.) The premonitory stage lasted five or ten minutes, and sometimes

was not followed by an attack. (2.) The left thumb commenced as a rule to twitch first. (3.) The convulsive stage varied greatly in severity and duration, lasting from two to fifteen, or even thirty minutes. (4.) The pulse during this stage was hard and small, but as soon as he passed into the comatose stage it became very full, rapid, and bounding, increasing from 60 or 70 to 100 or 110, and the frontal arteries stood out like thick cords. (5.) There was conjugate deviation of the eyes to the left. (6.) The post-paroxysmal stage generally lasted from one-half to two hours, or even longer.

In September, 1890, as he was facile, weak-minded, had no delusions, and had not had a fit for nearly a month, he was sent home on trial, but the excitement consequent on the change appears to have greatly accelerated the process of degeneration, for in a week he was reported by his friends as having passed from being "very strange" to be so dangerously violent as to necessitate his return to the Asylum. A few days later Dr. Wilson (Assistant Physician) noted—"Very stupid, cannot articulate clearly, although he tries to talk incessantly. Is restless, and so unsteady in his gait that he cannot walk without support." He was given a tonic and fattening diet, and improved during the next month, but on November 13th, 1890 (*i.e.*, about two years after admission), he had a slight general convulsive seizure. This attack stands out as a landmark in the history of the case, for after it the *right* side, and not the left as formerly, was paralysed for about half an hour. The next day at 11 a.m. he had premonitory symptoms of an attack and stayed in the house, but it did not develop until 4 p.m., when he became aphasic, and without any obvious seizure the *right* side again become partially paralysed. At 1 a.m. he vomited a quantity of mucus and appeared to be sinking; his pulse rose to 128; temperature, 100°; respirations, 48. His lips and teeth were dry and covered with sordes, his eyes glazed and half open. He remained in this state till late the next evening, when he had a slight seizure. From this condition he gradually rallied, but during the next six months became more and more demented, although he had no attack till May, 1891, when he had seven fits within an hour, and both sides appeared to be equally affected. During the following month he developed symptoms of acute mania, and about the end of June control of the bladder and rectum was lost.

In August the case came directly under my care, and taking into consideration the slurring speech, the paresis, the epileptiform seizures, a lingual tremor (which, however, was not constant), and his state of joyous mania, in addition to spastic myosis, exaggerated reflexes, incontinence of urine and fæces, and recollecting his previous history, I pronounced him an anomalous case of general paralysis of the insane of the epileptiform, non-delusional variety—a diagnosis that was not verified by the *post-mortem* appearances.

He now increased in weight from 10 stone to 11 stone 2 pounds in four months, but from this date degenerated very fast. The convulsions, which were few, were localised to the right side, and lasted from a few minutes to one or two hours. Trismus now became a troublesome symptom in the first paroxysmal stage, lasting from twelve to twenty-four hours, and necessitating feeding by the nasal tube. A large dose of chloral and bromide, however, almost invariably curtailed the attack. It was given with his food, and at the same time a hypodermic injection of sulphate of atropin was administered. He now became so completely paralysed that from May till July 30th, 1892, when he died, he was confined to bed. He rapidly developed bed-sores, and finally pneumonia terminated his life.

During the last three months he had twice passed into the *status epilepticus*, and in order to carry out the chloral treatment it was necessary to chloroform him. Though in this state the convulsion was general, the right side was up to the last distinctly more affected than the left.

The *post-mortem* examination was made on the 1st of August, 1892. The skull-cap presented no abnormal appearance, and was removed without any unusual difficulty from the underlying dura mater. The external surface of the latter was likewise normal, but on reflecting it on the left side an extensive membrane (Fig. 2), covering over the whole of the hemisphere with the exception of its basal surface, was disclosed. This membrane was slightly adherent to the inner aspect of the dura mater, but had no organic attachment whatever to the arachnoid. It was of a bright red colour, and was practically of uniform thickness—about three-sixteenths of an inch—throughout its entire extent. On similarly reflecting the dura mater covering the right cerebral hemisphere, a structure became apparent which in some points resembled that found on the opposite side, though it differed considerably in its thickness and intimacy of attachment to the dura mater. Over the anterior part of the frontal and the occipital lobe the membrane was very thin, being little more than a delicate vascular veil, which could be readily peeled off the dura mater; while over the posterior portion of the frontal and the parietal lobe, it formed a large semi-fluctuating tumour (Fig. 1), measuring about an inch in its maximum thickness, and more firmly adherent to the dura mater. The brain tissue lying directly underneath this new formation was flattened and softened from its pressure. The pia-arachnoid was not morbidly adherent to the cortex, it was not waterlogged, and there were no granulations in the ependyma of the ventricles. Except the softening and flattening above mentioned, the brain presented no lesions visible to the naked eye. The weight of the brain meninges and tumour was forty-nine ounces, while the tumour, with the dura mater of its own side, weighed seven ounces. About five ounces of sanguineous fluid were drawn off from the sub-dural space.

A small portion of the membrane on the left side showed under the microscope numerous fibres intertwining with one another, blood-corpuscles in different stages of degeneration, and masses of pigment. When a section was made into the tumour its external wall was found to be firm, about one quarter of an inch in thickness, and composed of several laminæ of strong fibrous tissue, from the most external of which the dura mater could be detached without using much force. The inner wall of the tumour, on the contrary, was exceedingly thin, and when partially reflected showed a cyst filled with a large quantity of coagulated blood. As the clot had not undergone so-called organisation, and as no crystals of hæmatoidin could be detected in it, the probability is considerable that the hæmorrhage took place shortly before the patient's death. The dense fibrous tissue constituting the external wall of the cyst was probably of some years standing.

Several terms have been applied by different authors to the pathological conditions present in this case. Of these it may suffice to enumerate the following:—Pachymeningitis hæmorrhagica interna, hæmatoma of the dura mater, arachnoid cysts. Such formations, though stated to occur in profound alterations of the blood, in the acute infectious diseases—particularly in typhoid fever, scarlatina, small-pox, and relapsing fever—or as the result of injury, are exceedingly rare outside lunatic asylums. Gowers[a] states that for forty years not a single specimen of this condition was exhibited before the London Pathological Society, which receives the curiosities of metropolitan necroscopy. In asylums these lesions are by no means so uncommon. Of 637 unselected *post-mortem* examinations on the insane at Rainhill Asylum, Wigglesworth[b] states that 54 presented varying degrees of this affection. The age of the youngest patient was thirty, and the average age of the series of 54 cases was 51·61 years. The maximum number of cases in any one decade was 18, and these occurred in the decade from fifty to sixty.

Of the different forms of mental disorders associated with pathological features similar to those under consideration at present, general paralysis stands out prominently. Over half (29) of Wigglesworth's series were general paralytics. A similar proportion has been obtained by Bevan Lewis[c] from statistics based on 132 cases. He found that of these 63, or 47·7 per cent., suffered from general paralysis. In addition to the factors above

[a] Gowers. Diseases of the Nervous System. Vol. II. P. 294.
[b] Dictionary of Psychological Medicine. P. 879.
[c] Text-Book of Mental Diseases. P. 440.

enumerated in the production of this morbid condition, chronic alcoholism is mentioned by several authors.

The process is in almost half the cases bilateral, but often more marked on one side than the other. The membranes lie most frequently on the vertical and lateral aspects of the hemispheres, but may extend on to the base. They are, however, rarely, if ever, found on the lower aspect of the tentorium, or in the cerebellar fossa.

The pathology of the condition, notwithstanding the attention which has been devoted to it during the past fifty years, is not yet fully solved. Two main theories of the causation of these membranes have been propounded. These may be described briefly as the inflammatory and the hæmorrhagic respectively. Prescott Hewitt, in a paper read in 1845 before the Medico-Chirurgical Society, advocated the latter theory; but in 1854 Virchow published his views in favour of their inflammatory origin, and they were for many years those generally accepted by pathologists. Latterly Huguenin, in an exhaustive article in von Ziemssen's Encyclopædia, revives and strengthens Prescott Hewitt's theory, and pathological teaching in the English school seems to tend in the same direction.

According to the inflammatory theory, the thin gelatinous film, which is the earliest stage in the formation of the membrane, is the result of an inflammatory exudation. This becomes organised, and other membranes are formed on top of it, thus producing its laminated appearance. The hæmorrhages, which often occur between the new-formed membranes, are attributed to the rupture of the recently-formed vessels. The advocates of the hæmorrhagic theory, on the contrary, teach that the primary mischief is a hæmorrhage, and explain the laminated character of the membranes by assuming a succession of hæmorrhages. Most authorities are of opinion that the blood is derived from the vessels of the pia mater, which, owing to the loss of support produced by the atrophy of the convolutions, are particularly liable to bleed. A recent writer,[a] however, contends that the blood is derived from the vessels of the dura rather than the pia arachnoid, and that the cause of the hæmorrhage is not a mere "loss of support," but the gradually diminishing intracranial pressure exerting a suction action on the vessels similar to that produced by the process of dry-cupping.

[a] Article in the Journal of Mental Science for April, 1893. By Dr. Robertson.

Fig. 2.

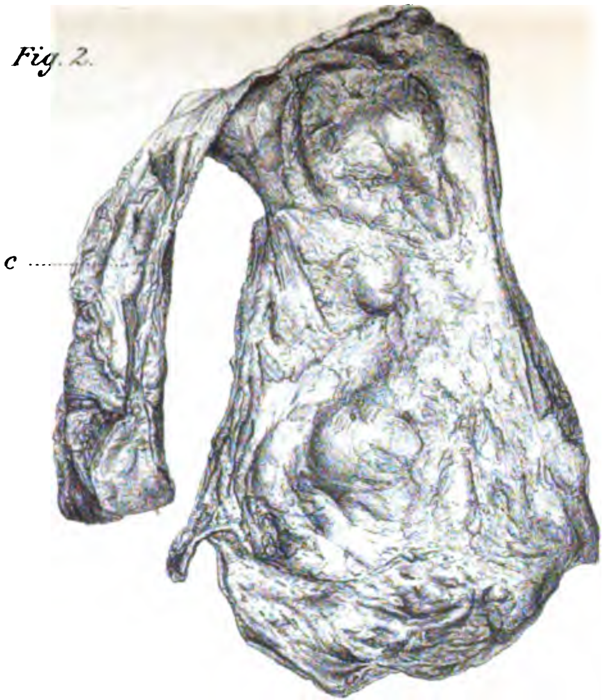
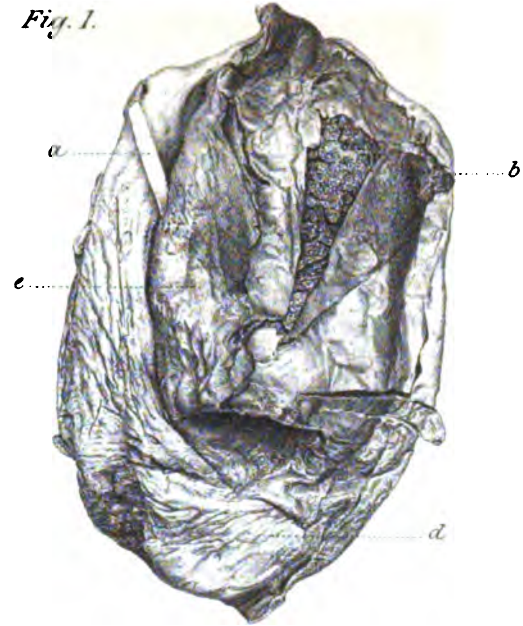


Fig. 1.



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DUR-HÆMATOMA ASSOCIATED WITH JACKSONIAN EPILEPSY.

D^rs Eustace and Parsons.

In the case under consideration the ease with which the tumour can be detached from the dura mater, and the absence of any marked thickening of the latter, would seem to point to a hæmorrhagic rather than an inflammatory origin.

The symptoms connected with hæmatoma of the dura mater vary considerably. In some cases they are in complete abeyance, while in others they suggest cerebral compression. In the light of the *post-mortem* examination it seems probable that the convulsive attacks in 1888, which chiefly involved the left side, were produced by a series of hæmorrhages over the right cerebral cortex. In process of time these became organised, and shortly before the patient's death a profuse hæmorrhage took place between the laminæ, and so produced the hæmatoma shown in Fig. 1. The extensive membrane covering the left cerebral hemisphere was probably formed about 1890, and manifested itself by convulsions involving chiefly the right side.

Bearing in mind the frequent association of dur-hæmatoma with general paralysis of the insane, the absence of the usual pathological signs of the latter at the *post-mortem* examination is interesting.

EXPLANATION OF THE PLATE.

Fig. 1.—Dur-hæmatoma with dura mater of right side attached—
- **a. Probe passed between tumour and dura mater.**
- **b. Inner wall of tumour partly reflected, showing coagulated contents.**
- **d. Inner aspect of dura mater covered by thin, false membrane.**
- **e. Membrane detached from dura, and reflected on to tumour.**

Fig. 2.—Pachymeningitis hæmorrhagica interna of left side—
- **c. Falx cerebri.**

Art. XII.—*A Successful Case of Porro's Operation.*[a] By

Nicholas Whistler Colahan, M.D., M.Ch.; Professor of Materia Medica and Therapeutics, Queen's College, Galway; Surgeon to the Galway Hospital.

The case I have the honour to bring under your notice is one of pregnancy occurring in a rachitic dwarf, in which it became necessary for me to perform abdominal section, delivery being impossible *per vias naturales.* Porro's Cæsarean hysterectomy was the proceeding I adopted to complete delivery. The operation was performed on the 16th of May, 1892, and was completely successful in saving the lives of both the mother

[a] Read before the Section of Obstetrics of the Royal Academy of Medicine in Ireland, May 26, 1893.

and her child. On the 18th of February last, nine months after the operation, I had an opportunity of showing both mother and child to some members of the Academy, who happened to be in Galway on university business. The case is interesting, and, as far as we in this country are concerned, it has still, to a certain extent, the attraction of novelty for us. On April 24th, 1891, I find Dr. Bagot described the first successful case of Porro's operation performed in Ireland. Dr. More Madden, in his recent communication to this Section, on the 28th of last month, I find, also, mentions a successful case. As far as I know this is the third, and the first, I believe, in which mother and child were saved. I dwell upon these facts, for I believe it would be both important and interesting to learn why abdominal section for obstetric purposes is rare in this as compared with other countries, for there is no doubt that both Cæsarean section and the Porro-Cæsarean operation are growing rapidly in favour in England, as well as on the Continent and in America. Is it that cases are not forthcoming suitable for these proceedings? or is it that we still prefer the time-honoured methods whereby the instrumental death of the child gives, as we were wont to think, greater hope for the safety of the mother, and that we refuse to recognise, except in a few exceptional cases, conditions which would warrant us in advising or undertaking abdominal section. [Photograph of patient here shown.]

Case.—This little patient, B. C., a rachitic dwarf, forty years of age; 39 inches high; unmarried; menstruated last in July, 1891; became pregnant in August, 1891, was admitted to lying-in ward of hospital on Saturday, 14th May, 1892. On Sunday, 15th May, labour, at term, set in; pains rather irregular; ordered an opiate. On examination I found it difficult to reach the os, which was drawn very high up, but the promontory of the sacrum was discovered protruding as a sharp wedge, leaving the conjugate under two inches. It was evident that delivery could not be effected through the natural passage, and, after consultation with my colleague, Dr. Lyden, it was decided that abdominal section should be resorted to, and I determined to send the patient to the County Infirmary, where I could most conveniently perform the operation, and where I would further have the advantage of having the after-treatment carried out by an excellent nurse. Accordingly, on the evening of Sunday, 15th May, the patient, in charge of an experienced midwifery nurse, was taken to the Infirmary. It is important to note here that the pains which had been very irregular during the day, and had almost

Dr. COLOHAN ON PORRO'S OPERATION.

From Photo. F Huth, Lith.r Edin.r

disappeared towards evening, again set in, perhaps owing to the excitement of having to leave for the Infirmary, and before reaching the latter place the membranes gave way, and the waters were discharged. However, on being made comfortable in bed, and an opiate administered, matters again became quiet, and late on Sunday night my resident pupil at the Infirmary reported to me that the patient was very quiet, and taking her nourishment. Early on Monday, the 16th, my colleague, Professor Lynham, also saw the patient with me, and we decided that abdominal section should be performed as soon as possible. Accordingly, all necessary arrangements were made. An airy ward with single bed was warmed up with a small fire. The carbolic spray was allowed to impregnate the atmosphere while the other arrangements were progressing. A small narrow table near the window was used to operate upon. A few sponges wrung out of a 1 in 40 carbolic solution, boracic absorbent wool, and alembroth gauze, were the dressings used. Silver sutures were, in the absence of reliable gut or silk ones, arranged for the abdominal incision, and the instruments selected were extremely few and simple; finally, a solution of perchloride of mercury, 1 in 4,000 of boiled water, was used to sponge out the peritoneum and other exposed parts.

I believe the success of these proceedings depends much upon the rapidity with which they are carried out, and I believe that rapidity, with strict attention to details, depends entirely upon a perfect understanding between the operator and his assistants. I therefore wrote out, as shortly as I could, on a slip of paper, directions for each assistant—what I wished him to be prepared to do for me, and the period of the operation when I would require his services. I was very pleased with the result. There was neither flurry nor anxiety; I felt that every movement and wish of mine was followed and anticipated, and not for one second from start to finish was there a check in the operation, which occupied under twenty-five minutes. I merely notice one or two difficulties that arose during the operation. I mentioned that the waters had already been discharged; this rendered the abdominal wall very lax; the uterus was further tilted to the left side, and it was quite impossible to be certain that the external incision was in the line of the linea alba. I was obliged to open the sheath of the rectus, and passing a probe between it and the muscle on either side, I found I was fully an inch to the left of the middle line. This may be a point of importance. The abdominal incision reached from the umbilicus to within about two inches of the pubes; and although the uterus was well pressed forward into the abdominal incision, yet several coils of distended bowel leaped out on all sides, and were it not for the inevitable flat sponges would have given serious trouble. It is a pity that these said sponges have such a tendency at the most critical period of the operation to conceal them-

selves, and remain behind. I was not spared this experience, but the sponges were previously numbered, so the delinquent was quickly discovered.

The uterine incision was done by cutting; no effort was made to fix the placental site, but a small incision was made in the middle line at the fundus; two fingers were introduced, and, using these as a guide, with a probe-pointed bistoury the thick uterine wall was quickly run through, down to the pubic end of the abdominal incision. I was glad I determined to cut, for the uterus having contracted after the waters were discharged, the thick walls would not, I fancy, have torn kindly. Two or three sinuses bled to an alarming extent, but were quickly controlled. The contracted uterus jammed the infant so tightly down in the pelvis, that I was obliged to take the probe bistoury again and extend both the uterine and abdominal incision downwards. Even then with difficulty was the child liberated. It was a full-sized infant, with a well-marked hydrocephalic head, and, a further difficulty, the funis was twice coiled round its neck. The cord was clamped and cut, and the child given to the nurse. I think this is a critical period in the operation. The child having been liberated, the uterus very suddenly becomes small, and ceases to fill the abdominal wound as it did, therefore fluids and blood can more easily enter the abdomen. Further, the distended bowels, kept in restraint till now, burst out on all sides, greatly to our embarrassment. In this way they get covered with blood and other fluids, which they carry back into the abdomen to the danger of the patient. To meet this difficulty I thoroughly sluiced the protruded bowels each time they appeared with the perchloride solution before returning them to the abdomen. It is a good practice, for it saved what would have been afterwards a troublesome peritoneal ablution.

I was obliged to remove the placenta while the uterus was still in the abdomen. It was a large one, and to have taken it away with the uterus would have necessitated some forcible tugging. All through this period Dr. Lyden, with a finger in each end of the incision, kept the uterus well pulled forward, and when everything was ready swept it out of the abdomen, and, giving it a half turn, brought it down towards the pubes. This effectually stopped all hæmorrhage, and I was able quietly to suture the abdomen with seven silver sutures—the first drawing the abdominal wall tightly round the pedicle, the other six embracing the entire thickness of the abdominal wall and peritoneum. The uterus was now put well on the stretch, and two stout steel pins shoved through the utero-vaginal pedicle. I had not a serre-nœud, and I was not certain of the elastic ligature I had with me, so I encircled the pedicle below the pins with a double strand of stout whip-cord. This I certainly would never do again. It was, I think, the one weak spot in the operation, and nearly cost my patient her life.

The uterus was now cut away, the stump shaped and dressed with iodoform, alembroth gauze, and boracic wool. The abdominal incision was dressed separately in the same way; and, finally, a warm flannel binder was drawn firmly over all. The A. C. E. mixture was the anæsthetic used by Professor Lynham. There was some vomiting afterwards, which, fortunately, did not last very long. On the whole, the little creature bore the operation remarkably well, and when placed in bed expressed herself as comfortable. It was evident, however, that she was very weak, and I kept near her for some time. It was well that I did so, for in a very short time, perhaps owing to effort of vomiting, I noticed that the wool plug over the pedicle was saturated with blood, and I at once saw that the stump was bleeding freely. This very undesirable accident would not have occurred with the serre-nœud, nor with the elastic ligature; in fact the serre-nœud would have been the proper instrument here, where the pedicle was healthy and fleshy, the elastic ligature when it is poor and friable. However, having neither, I applied another coil of whip-cord beneath the pins, applied the thermo-cautery freely to the bleeding points in the stump, and all appeared right again. The shock to the system after Porro's operation, where there is not only an abdominal section, but, in addition, the removal from the body of an important organ, is the one great drawback to this proceeding. It is well to bear this in mind, and I believe the patient should be well supported from the first. In this particular case, milk, Brand's beef jelly, and iced champagne were given rather freely at stated times. The temperature never rose above 101°, which it reached on the third day, never afterwards. On the seventh day, while dressing the stump, the patient got a severe rigor. Soon after enormous distension and tympanites set in; one of the sutures gave way, and had to be replaced, in order to relieve the strain on the others, but the prompt use by the nurse of O'Beirne's tube relieved the flatus, and an enema moved the bowels, and what appeared an impending attack of peritonitis was averted. It is at such moments as these that skilful nursing saves the position, and turns the tide in our favour. On the eighteenth day the pedicle came away, and at the end of the third week the little patient was permitted to move about, and the infant seemed nothing the worse for his novel method of entering the world.

It may be asked—why did I not adopt the true Cæsarean section with uterine sutures, instead of removing the uterus after Porro's method? Well, I am as suspicious of the absolute reliability of statistics as most men—yet when we are in doubt and anxiety we find ourselves consulting them, and they often sway us one way or the other.

In my hurried search I gathered—1st. That in a general way at least Porro's operation is the easier and more rapid proceeding—tedious uterine suturing being avoided. 2nd. I fancied I learned that a ***true Porro's operation, with a sound uterus and a viable fœtus,*** carefully done, and at a proper period, is at least as successful as the most carefully performed Sanger or Cameron-Cæsarean section. And lastly, looking at my little patient, and learning from the experience of others that these little people having escaped from the dangers of one pregnancy have a peculiar facility of getting entangled in a similar predicament again, I saw no reason why I should hesitate to deprive her of the chance of such a calamity, and myself, perhaps, of a further period of trouble and anxiety.

I have to express my thanks for being permitted to bring this case before you at this very advanced period of the Session, when many pressing matters have still to be considered. I trust, however, it may be useful in inducing others to pause before habitually resorting themselves, or advising others to resort, to the older method of infantile mutilation in obstructed labour to the exclusion of abdominal section; and useful further in proving that with strict attention to details, and with careful antiseptic precautions, this very serious obstetrical operation can be undertaken with a very fair chance of success.

ART. XIII.—*Hydronephrosis.*[a] By CONOLLY NORMAN, F.R.C.P.I.; Superintendent, Richmond (Dublin District) Asylum.

A CASE of true obstructive hydronephrosis is sufficiently rare to merit a brief notice in this Section.

CASE.—The woman from whom these viscera were removed was a patient in the Richmond District Asylum, Dublin, for little over a year. As is the case with too many of my patients, received from the police courts, and certified at sight, there was no history of any trustworthy kind. However, there could be no doubt that the woman had led a very loose life in every way. On admission she suffered from general paresis. Mentally her symptoms were those of the tranquil and demented type of that affection. She presented no distinct indication of syphilis. She never exhibited any symptoms pointing towards renal or urinary trouble. In the spring of 1892 she contracted influenza, a very severe form of

[a] Read before the Section of Pathology of the Royal Academy of Medicine in Ireland, January 13, 1893.

which was epidemic in the institution at the time, and she subsequently developed pneumonia with pleurisy, of which she died after a short illness. There is nothing special to be noted in the symptoms or course of the lung affections.

Post-mortem.—The nervous centres exhibited the usual lesions of general paralysis. There were no signs of syphilis in the other viscera. Heart normal. Patches of atheroma in the aorta. Middle and lower lobe of right lung in a state of red hepatisation passing into grey below. The pleural surface of the hepatised lobes was covered with a very thick layer of yellowish lymph. Liver very slightly cirrhosed. Spleen large and soft. There were well-marked signs of chronic cervicitis, otherwise the genitalia were normal.

The right side of the abdominal cavity was occupied by a large tumour, which had displaced the intestines and pushed up the liver. It was evidently the right kidney converted into a large multilocular cyst with a leathery wall and fluid contents. The tumour was distinctly loculated, but not so deeply as in cases of congenital cystic kidney, and the loculi were few in number—some six on the surface of the kidney which lay anterior. In greatest vertical length the tumour (sacculated kidney) measured 21 centimetres (about 8¼ inches), its horizontal circumference at the hilum was about 20 centimetres (say 7⅞ inches), but its circumferential measurement varied at different parts owing to the degree of bulging of the sacculi, &c. The kidney contained almost 22 ounces of clear inodorous fluid, containing a few sparkling particles, a few small flakes of a whitish greasy-looking substance. A section made in the usual plane shown that the kidney consisted of about ten sacs of different sizes, the largest being at the superior and inferior extremities. Some of these loculi were not perfectly separated from each other; others were shut off from the rest by tough fibrous dissepiments, which closed in towards the centre in such a way that the loculus communicated with the dilated pelvis by a funnel-shaped opening. Ridges of a similar material divided the loculi, which were not completely shut off save at the funnel-shaped opening. Some of the loculi were not slit up by the ordinary incision, but their opening into the pelvis was evident.

To the naked eye there was no trace whatever of normal kidney structure; the mass presented simply the appearance of an agglomeration of leathery-looking sacs opening into a common cavity by generally narrowed mouths, and circumscribed by a common wall which preserved the general outline of an unusually lobulated and much magnified kidney. The outer wall of the loculi, representing the cortex of the kidney, varied in thickness from 1½ to 5 millimetres, but the general thickness, which was pretty uniform, was little under 2 m. The trabeculæ between the sacs varied in thickness from 2 m. to 1½ centimetre. The larger showed a very distinctly fibrous structure, and cut like strong fibrous tissue. One

large mass which lay at the base of several loculi, separating them from the pelvis, cut with gristly firmness, and contained within fibrous walls a quantity of fat. The right ureter was throughout dilated, save at its lower extremity, and its wall was much thickened. About its middle third there was a remarkable fusiform dilatation for about three inches of its length. Towards the lower extremity the ureter somewhat abruptly narrowed, and became converted into a tough rounded cord without lumen for about one inch from the bladder. The latter viscus seemed perfectly normal, save that it presented no trace of an opening for the right ureter; the mucous membrane in this position was quite smooth, and showed no sign of old inflammation. The left ureter was normal. The left kidney was very large, but both to naked eye and microscopic examination the structure was normal, the enlargement being no doubt compensatory. The glistening particles which occurred in the fluid in the right kidney and ureter proved to be scales of cholesterin crystals, and the whitish flakes were chiefly composed of cholesterin, mixed up with what appeared to be epithelial *débris*.

The most remarkable appearance which the specimen presented has yet to be referred to. This is still well shown, as the kidney which is before the Section was preserved in one of the chrome fluids, and has undergone little or no change in aspect save for a darkening of colour. I refer to the peculiar shaggy appearance presented by the entire of the internal surface of the saccules of the kidney, and of the pelvis, and of the ureter, as far as it is pervious. On close examination with the naked eye, or better, with a simple lens, this roughening of the internal aspect of the organs is seen to be due to minute elevated lines running irregularly all over the surface and intersecting in all directions. This appearance I have not been able to find described anywhere in connection with any form of dilatation of the kidney, and I think it must certainly be rare. It is not presented by any museum specimens which I have seen. I have brought here three other specimens from my own museum, exhibiting various degrees of obstructive dilatation of the kidney, but none of them exhibit any resemblance to the condition described. One presents considerable dilatation of a kidney, the secreting structure of which has been much contracted by ordinary gouty cirrhosis, in a man who suffered from stricture of the urethra. The second specimen is a good example of the changes in the urinary organs which supervene upon vesical calculus. The bladder is small and enormously thickened. It contained a rather large calculus. The ureters

are widely and unequally dilated, ridged in parts, and in parts constricted, and the right shows an almost perfect valve. The kidneys are dilated and sacculated—excellent examples of "surgical kidneys." These organs were removed from the body of a patient who died of uræmia immediately after I took charge of the Richmond Asylum.

The third specimen is the urinary organs of a male patient, who died recently in the asylum of villous cancer of the bladder. The earliest symptom had been violent hæmorrhage from the bladder about a year and a half before death. Later on intense pain appeared, referred chiefly to the flanks and loins. The growth sprang from the trigon, and had obstructed the orifice of the left ureter, so that it was somewhat difficult to inject a stream of water from the ureter into the bladder. It had altogether blocked up the opening of the right ureter. It will be seen by the way the right ureter is double, presenting this condition, that two distinct tubes arise, one above another, from the pelvis of the ureter, run quite separately for about half their way, then adhere, but form two separate channels almost the entire remainder of their course, and unite just outside the bladder by obliteration of their adjacent walls. The left kidney is in an early stage of sacculation, the right in a more marked condition of the same state.

Now all these three specimens show the same perfectly smooth condition of the internal surface of the kidney and also of the ureter. The ureter of the patient with the cirrhotic kidney shows a rugose condition of the whole thickness of the wall, but the mucous membrane itself is perfectly smooth. Similarly with the case of stone, though there are ridges and constrictions, and something approaching to valves, the mucous membrane retains its normal smoothness and glister.

The smooth condition of the interior is mentioned in every description of the sacculated kidney or hydronephrotic kidney of obstruction which I have come across.

Under the microscope the walls of the hydronephrotic kidney which we are examining are seen to consist chiefly of adult connective tissue, showing here and there in every specimen examined tubuli uriniferi, and, in some, distinct glomeruli. The tubuli are generally exceedingly small, and often have a hardly distinguishable lumen. The glomeruli, also, are highly degenerated. Both are often filled with a dense mass, staining deep red with carmine (colloid). The elements are arranged thus:—In the outer walls

of the sacculi, forming the wall of the kidney, dense connective with a few elongated nuclei lies outside; within is a layer of connective fibres, among which are the remains of glandular tissue with frequent masses of small round cells. These masses run in bands parallel to the direction in which the fibres and tubuli run in the long axis of the sections made in a vertical plane. Internal to this layer lies a layer of swollen-looking connective tissue fibrils, staining imperfectly or not at all in carmine or logwood, rising at irregular intervals in loose concentric loops, which form the small ridges visible to the naked eye on the internal surface of the sacs. Scattered on the surface of these elevations, and gathered in little heaps between them, are granular-looking masses, which stain a dirty yellow in carmine and a greyish tint in logwood, and which recall the masses of epithelial debris which we find in place of the tubuli in advanced cases of cirrhosis. From these heaps bands of a similar material, mixed, in some places, with small round cells, run down diagonally between the elevations to join the clusters of small cells in the lower layer.

Exactly the same conditions are found in the dissepiments between the various loculi. Here a broad band of white connective tissue, with few elastic fibrils, forms the central portion of the walls; the other layers occur on each side.

The thickened ureter shows on its surface a layer of swollen fibres rising into elevations, with epithelial or inflammatory debris accumulated between them, and thinly scattered on the surface.

The sections presented show all the appearances above described.

That the destruction of this kidney and its conversion into a sort of multilocular cyst depended upon the closure of the right ureter at its opening into the bladder seems evident. I should say, from the remains of secreting structure still to be found, that this closure occurred after the kidney had begun to functionate.

What gave rise to the closure of the ureter is not clear. Possibly it was due to gonorrhœal cystitis.

The peculiar roughened state of the internal surface of the ureter and kidney, together with the microscopic find, suggests a chronic inflammatory condition of the lining mucous membrane, but why this condition should arise in this particular case I am at a loss to say. The state of the ureters in the case of stone exhibited, seems to indicate that they were damaged by the passing of gravel or small calculi, yet their mucous membrane retains its smooth aspect.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Manual of Bacteriology for Practitioners and Students, with especial reference to Practical Methods. By Dr. S. L. SCHENK, Professor Extraordinary in the University of Vienna. Translated from the German (by the Author's permission), with an Appendix, by W. R. DAWSON, B.A., M.D., Univ. Dubl.; late University Travelling Prizeman in Medicine. London: Longmans, Green & Co. 1893.

To add another to the many text-books of bacteriology that have appeared within the last few years both at home and abroad would at first sight appear superfluous. When there already exists an adequate "up to date" literature dealing with a given subject, some apology or excuse is generally made for the appearance of a new aspirant to public favour on the same lines. At any rate, some explanation of the new book's *raison d'être* is usually given—and expected; for the production of new text-books without special features, whether of contents or arrangement, to recommend them, is admitted on all hands to be a waste of energy uncalled for as it is injudicious. The volume now before us seeks admission to the shelf already groaning beneath the weight of Crookshank, Woodhead, Griffith, Migula, Sternberg, Cornil and Babès, Fränkel, Flügge, &c., and therefore, the translator's and author's prefaces were first of all consulted in order to find out the particular feature to which these gentlemen point as the *raison d'être* of this new text-book of bacteriology.

In the first sentence of his preface the author tells us that "the methods of investigation have been dealt with as thoroughly as possible, special attention being paid to the elementary technique." How far this claim is justified we shall see presently. The third sentence in the preface is a rather mysterious one, and we give it *in extenso* for the benefit of the ingenious reader:—"Particular attention has been given to the pathogenic micro-organisms, and so much the more regard had to be paid to the chemical relations of the life of bacteria, and to their biology generally, that recent

events give us reason to hope for an extension of our therapeutic powers from this direction." Reiterated perusal of this phrase makes one suppose that Dr. Dawson must have become infected with some of his author's Teutonic obscurity; and this supposition is strengthened on reading the next paragraph:—"Engravings of the most important bacteria have been provided, showing their form and the appearances presented by their growth. These are intended to serve the reader as models of the typical forms, to which he may be able to adhere in his own investigations."

Turning now to the body of the book, we are struck on reading the first few pages with an absence of any biological classification. The author gives no definition of what he means by micro-organisms, further than that (p. 2) "they belong to the following different classes, viz.—*bacteria*, *moulds*, *yeasts*, *algæ*, and *protozoa*." Under the head of *algæ* (p. 12) he says, "Of these the *cladothrix*, *crenothrix*, and *beggiatoa* varieties belong to the micro-organisms." These genera are thus reduced to the level not merely of species, but of mere varieties, not worthy of a capital letter; and no reason is given why these, and these only, are included amongst the "micro-organisms," whilst allied genera, equally minute, are "left out in the cold."

The only other piece of information imparted about these varieties will, doubtless, prove novel to the scientific botanist—"They are jointed filaments which multiply, not by fission, but by *germination* at their extremities." [The italics are ours.] On the same page we are told that yeasts "possess neither spore-bearing organs nor spores"; and another surprising statement also on the same page is, that "of the protozoa those important as regards bacteriological investigation are the *sporozoa*, which include the *gregarinæ*, *psorospermii* (*sic*), and *coccidia*. They are unicellular organisms which can only live in a moist or liquid medium, and in the absence of water, nutrient material, or oxygen, are transformed into roundish durable cysts." It might fairly be asked whether any protozoa can be called important as regards bacteriological investigations? and whether they cease to live on being transformed into cysts? and also whether the transformation in question is really dependent on the conditions mentioned, and not part of the necessary life-history of the species? In a book that ought to be exact such looseness can result only in imparting superficiality of view and inaccuracy of knowledge—intellectual defects that can hardly fail to be

contracted by the inexperienced reader who obtains his first notions of bacteriology from this text-book. The introductory pages contain many errors, some of them actually comic. Thus, protozoa (p. 12) are said to "possess a sort of larval condition consisting of irregular and roundish little masses of protoplasm which move by means of processes projecting out like limbs. . . . . The contents of the cyst separate by division or gemmation into particles called *sporocysts* or *pseudonavicella*" (*sic*).

We seem to have gone back into the early part of the century when we read (on page 10) that "the moulds form special seed-bearing organs called *hyphæ* or *thallus*," and that "according to the form of the seed-bearing organ they are divided into *mucorineæ*, *aspergillineæ*, *penicilliaceæ* and *öidiaceæ*," and this written by a contemporary and fellow-countryman of the illustrious Brefeld! The scarcely scientific term "knob," is employed by the translator of this interesting classification. "In the *mucorineæ* (or headed moulds) the ends of the hyphæ swell into *knobs* (*columella*), around which a seed capsule or sporangium forms. . . The *aspergillineæ* (*knob*-moulds) have the *knobbed* ends of the hyphæ covered with a variable number of spore-carriers, &c. . . The hyphæ of the *penicilliaceæ* (pencil moulds) are branched, which is not the case with the mucor and aspergillus *varieties*."

The same superficiality and inaccuracy are especially noticeable in the descriptions of elementary technique, which the preface led us to hope would be of a peculiarly explicit character.

In the description (on p. 82) of the celloidin method no directions are given as to the size of the pieces of tissue, or as to the position of the knife in section-cutting, and the period (at least 24 hours) assigned as sufficient for the celloidin impregnation is not nearly long enough save for quite small pieces, if "the finest sections" are to be obtained. The paraffin method is next described, but no mention is made of oil of cedar-wood as a vehicle, although it is deservedly one of the most widely employed agents, nor is anything said about the melting point of the paraffin and the relation it must bear to the temperature of the room. Yet this is an essential point if good sections are to be obtained.

One more example of Professor Schenk's method will suffice. Here is how he described the freezing method of sectioning tissues: "In order to be able rapidly to examine pieces of organs, recourse is had to the freezing microtome. The substance in the fresh

state is laid on a roughened metal plate and frozen by means of an ether spray apparatus. It is then cut into sections with a cooled knife, and these are laid on slides allowed to thaw, subjected to staining processes, which will be described later on; after which they are most conveniently examined in glycerine."

All this seems very simple, but the beginner who attempts it with no other guide than Professor Schenk's account will soon find it a more troublesome matter than he anticipates. He is not told—

1st. How to prepare the tissue for section cutting.

2nd. How the cooled knife is to be guided.

3rd. How his sections are to be got on to the slide, and, finally, he is led to believe that sections of fresh (*i.e.*, unfixed) tissue can be successfully stained: which is not the case, in bacterial work at any rate.

. After reading Professor Schenk's account of histological methods, one is forced to ask—What is the use of it? Why not, once for all, refer the student to some practical text-book of histology? The experienced worker who comes on these pages of sketchy and imperfect description will pass by with a smile. The inexperienced student or practitioner who may attempt to stain bacteria in tissues "off his own bat" with Professor Schenk as his guide, can hardly fail to fall into every one of the numerous pitfalls with which this sort of work is beset, and throw up the whole thing in disgust.

Having dealt thus at length with some of the defects that disfigure this text-book, there still remains to be fulfilled the more agreeable part of our task—to signalise the merits which the work undoubtedly possesses. It contains a brief systematic account of the various organisms contained in air, water, earth, putrefying substances, articles of diet, such as milk and beer, in pus, fæces, urine, and on the surface of the human body as well as in its various cavities. The list of species dealt with is very complete, and can hardly fail to be of service to the investigator who is occupying himself with bacteriological analyses. It would have been infinitely more useful though, if the necessarily meagre details given in the text had been supplemented by references to the original sources. This omission is a grave one, and will materially detract from any utility which the work might otherwise possess. No less than thirty different species of organisms are described as occurring in atmospheric air, including some of the pyococci, the details about

which would have found a more natural position in the chapter on pus.

At the end of the book is an appendix in which Dr. Dawson steps in with good effect, to complete his author and supplement some of his deficiencies—*e.g.*, as regards the freezing method and fixation solutions. He also brings the book up to date by adding useful chapters on Haffkine's cholera-vaccine, parasitic protozoa, and the action of light on micro-organisms. It is strange that he does not include 1 per cent. osmic acid nor Foà's reagent in his list of fixatives for cancer "protozoa," and the period he assigns for "washing out" Flemming-objects (three to six hours) is much too short. Dr. Dawson's own style is occasionally disfigured by a certain amount of obscurity. Witness the following sentence in which he sums up the cancer-debate:—"Upon the whole it may be said that the weight of probability is on the side of the parasitic view, but its influence on the tissues is at present unknown."

The publishers, Messrs. Longmans, Green & Co., have done their utmost to make the book as attractive as possible: and in this they have succeeded. The paper is excellent, the print distinct and well spaced, and the margins are wide. Indeed both author and translator are to be congratulated on the really first-rate style in which their work is presented to the English reader.

On Diseases of the Lungs and Pleuræ, including Consumption. By R. DOUGLAS POWELL, M.D. Lond.; F.R.C.P.; Physician Extraordinary to H. M. the Queen; Physician to the Middlesex Hospital; Consulting Physician to the Hospital for Consumption and Diseases of the Chest at Brompton. Fourth Edition, with Illustrations. London: H. K. Lewis. 1893. Pp. 600.

WE welcome with much pleasure the fourth edition of this truly admirable work—a work which represents the extended experience and mature conclusions of one of our most distinguished English physicians. It is a work from which the experienced practitioner cannot fail to derive profit, while even the junior student can read it with ease and advantage, so clearly is it written. This edition has been thoroughly revised and brought up to date, and the more important results of recent investigations as to the nature of Tuberculosis, its mode of spreading and appropriate prophylaxis, have been incorporated in it. We look on Dr. Powell's "Diseases

of the Lungs and Pleuræ" as one of the best books that has appeared on the subject.

The first chapter relates to the anatomy and physiology of the chest. The chief point that Dr. Powell calls attention to is that when the normal chest is at rest, and all muscles are relaxed, the natural tendency of the lungs to contract is exactly balanced by the tendency of the ribs to expand. In health, throughout ordinary inspiration, the limit of thoracic recoil is barely reached, hence the thoracic elasticity is a reserve force of appreciable power constantly tending to enlarge the thorax, and therefore acting in favour of inspiration. In this he appears to be stating a fact which is generally overlooked or misunderstood, but when he goes on to say, "the sole resistance to be overcome by the inspiratory muscles is that of the lungs," he is surely forgetting that the inertia of the air must also be taken into consideration. A certain amount of force is used up in setting the air in motion.

The next two chapters treat of the Examination of the Chest and of the Sputum. They are exceedingly well written, and that on sputum contains some good illustrations. There are also four very good coloured plates illustrative of Tubercle Bacilli, Actinomycosis, and Membraneous Bronchitis. The formula, however, for preparing Neelsen's solution for straining tubercle bacilli is given quite wrongly.

The remaining portion of the book treats of the various pulmonary and pleural diseases, much the largest space (over 230 pages) being devoted to Tubercular Diseases. It is difficult to pick out any points for special commendation when all is so excellent. The clinical histories of many illustrative cases are published at length, with full records of *post mortem* appearances in those cases that proved fatal. Indications for treatment are given with care and minuteness. The value of change of air and scene, and the advantages and drawbacks of numbers of health resorts, are fully discussed. The author's conclusions are characterised by a painstaking and judicial impartiality.

With regard to the action of microbes in exciting disease, Dr. Powell seems to have some difficulty in ascribing much importance to them (always excepting the tubercle bacillus). Thus in writing of empyema he says:—"What the conditions are that determine suppurative rather than simple pleurisy we do not precisely know, and we have to speak of 'depressed conditions of the system,' 'morbid constitutional states,' and the like. We may, indeed,

with some plausibility maintain that some morbific agent present in the blood renders the inflammation purulent rather than serous, as in the joint affections in pyæmia, though the pus-producing quality in the blood is very difficult to estimate, and would seem to be of varied sorts." Then the author goes on to state that tubercle bacilli have been found in tubercular purulent effusions, and quotes Professor Kiener, of Montpellier, as to the presence and influence of several other organisms. We think this is a very poor account of the pathology of empyema. Many investigators of, at least, equal eminence with Professor Kiener have carefully studied the subject experimentally, and have considerably advanced our knowledge; and we think that Dr. Powell might have devoted a little more space to the consideration of this subject. On the other hand, the treatment of empyema is admirably discussed, and full details are given as to the best mode of operating.

The section on Consumption is wholly admirable. No one can read it without being impressed with the careful way in which the varieties of this disease are described, and their distinguishing features as regards prognosis or treatment pointed out.

In such a complete work as this we were surprised to find no account of Malignant Disease either of the Lung or Pleura. The subject of Circulatory Disturbances in the Lungs is also overlooked. We hope that these omissions may be rectified in the next edition.

We have found fault with a few points, but, after all, these are of very minor importance, and do not in the least interfere with the very high opinion we have formed of the work. We recommend it to all our readers who need a first-class work on Diseases of the Respiratory Organs.

A Text-Book of the Theory and Practice of Medicine. By AMERICAN TEACHERS. Edited by WILLIAM PEPPER, M.D., LL.D.; Provost and Professor of the Theory and Practice of Medicine and of Clinical Medicine in the University of Pennsylvania. In two volumes. Illustrated. Vol. I. Philadelphia: W. B. Saunders. 1893. Pp. 909.

"IN the preparation of this work," we read in the preface, "some of the teachers of practical medicine in the leading schools of America have associated themselves in order that each subject should be discussed by an expert of special authority. It may

then be said to represent truly the best teaching of the Science and Art of Medicine at the present time in this country." "The articles are not written as though addressed to students in lectures, but are exhaustive descriptions of diseases with the newest facts."

This is a high ideal; let us see how far it has been attained.

The first article is on Hygiene, by Professor J. S. Billings, occupying 44 pages. It is well written, as far as it goes, but cannot be said to be more than a sketch, containing the general principles of the subject, which may serve to assist the memory of a man who has already studied larger works, but which is too short to be of very much real value. It is not possible to teach very much about sewage disposal and sanitary appliances in four pages, or about ventilation in five. This article, too, has no illustrative figures.

The next section is on Fevers—the Continued Fevers, with Cerebro-spinal Meningitis and Influenza, being treated of by the editor, Dr. Pepper; and the Exanthemata, together with Anthrax, Hydrophobia, Trichinosis, Actinomycosis, Glanders, Tetanus, and some other diseases, being alloted to Dr. J. T. Whittaker, Professor of Medicine in Cincinnati. For this section we have nothing but the highest praise. These authors have, in our opinion, succeeded in attaining the ideal of the preface which we have quoted. The description of each disease is readable, exhaustive, modern, and reliable in a marked degree. Take, for example, Trichinosis—a somewhat rare disease in this country, at any rate, and one which in many text-books is passed over briefly. There is first a complete history of the disease, relating the various steps by which the nature of the disease became known, from the discovery by Hilton of minute white masses in muscles, to the observations and experiments of Zenker and Virchow, who succeeded in causing experimental trichinosis in rabbits by feeding them with muscle from a patient who had died of the disease. The life history of the trichina is then described, and its appearances in muscle, the subject being illustrated by a number of very good woodcuts. The symptoms, diagnosis, and treatment are then fully described, especial stress being laid on diagnosis—a most important matter in the case of an uncommon disease. The whole forms a complete and excellent monograph on the subject.

The articles on more common diseases, such as our own familiar Typhoid, are equally good, being sound and practical, and written

by physicians who write of their own experience and not of the latest fads. A number of useful prescriptions are given in full.

Tuberculosis, Syphilis, Diphtheria, Cholera, and some other diseases are described by W. Gilman Thompson, M.D., Professor of Physiology in New York University. The article on Diphtheria is exceedingly complete, and calls for especial mention as giving a better account of the bacteriology of the disease and of recent investigations on the subject, such as those of Behring and Kitasato, than do most other works on medicine, even including those recently published. With regard to Intubation *versus* Tracheotomy, Dr. Thompson seems somewhat to favour the first mentioned procedure.

Dr. Thompson's article on Malarial Fevers is also admirable. The plasmodium of Laveran is fully described, and several coloured engravings represent the microscopic appearances presented by blood containing the parasite.

The second part of the work treats of Mental and Nervous Diseases, and has been written partly by Dr. W. Osler, of Johns Hopkins University, and partly by Dr. H. C. Wood, of the University of Pennsylvania.

There is a good article on Mental Diseases by Professor Wood. He divides insanities into three classes, following Krafft-Ebing:—I. Complicating Insanities, the outcome of a distinct organic disease of the brain, and not dependent on acquired or inherited constitutional diathesis. II. Constitutional Insanities due to some constitutional disease, such as gout, epilepsy, alcoholism, &c. III. Pure Insanities, which again are sub-divided into Functional Insanities, liable to occur even in persons who have previously shown no mental warp, and who may completely and permanently recover; and Neuropathic Insanities, the outgrowth of some original vice of nervous construction, such vice only manifesting itself by functional aberration. We cannot see that this classification is well worked out, or is likely to serve any good purpose. Thus the Terminal or Secondary Dementia, in which so many cases of mania terminate, is classified among the Functional Insanities, though it is perfectly incurable, and must depend on some organic degeneration of the ganglionic cells in the brain which subserve mental processes.

In the section devoted to Functional Nervous Diseases, we are pleased to find a good and practical chapter on "Sleep: its Disorders and Accidents"—a subject that deserves to be treated more fully than it usually is in works on medicine. In it sleeplessness,

morbid somnolence, night-terrors, &c., are discussed. With this part of the work, on the whole, we are disappointed. It is well written and clear, as far as it goes, but many of the articles are very short, and are more like what we expect to meet with in an elementary work for students than in a book which "represents the best teaching of America." The account of the morbid anatomy of the spinal cord is often very poor; thus the whole account of the pathology (including morbid anatomy) of spastic paraplegia is comprised in four and a half lines. There are no figures to illustrate the features of disease of the cord, and only a very few illustrating the clinical features of various diseases.

This part of the work cannot compare with many of our English works on nervous diseases.

On the whole, then, we have formed a very high opinion, indeed, of the part of this Text-Book of Medicine which treats of fevers and general diseases caused by animal and vegetable parasites, while we are rather disappointed with the section on Diseases of the Nervous System.

The Law of Psychic Phenomena: a Working Hypothesis for the Systematic Study of Hypnotism, Spiritism, Mental Therapeutics, &c. By THOMSON JAY HUDSON. London: G. P. Putnam's Sons. 1893. 8vo. Pp. 409.

WE recommend this book to all our medical readers who take an interest in hypnotism as an example of what absurdities may still find advocates.

The following quotation is, we believe, sufficient:—"When mesmeric passes are made over a patient a fluid appears to emanate from the hands of the operator. An effluence of some kind certainly does come from that source, and one that is perceptible to the physical senses of the patient."

Army Medical Department Report for the Year 1891; *with Appendix.* Volume XXXIII. London. 1893. Pp. 402.

AN easily-pleased contemporary considers that a Report twenty months late is furnished with "commendable promptitude." To us it appears that information supplied so long after date is certainly stale, and probably flat and unprofitable also. We shall notice only two subjects of its contents—recruiting, with respect

to the physique of the British army, and venereal diseases as a preventable cause of inefficiency.

61,322 men (and boys) were enlisted in 1891. An outsider is struck with the apparent carelessness in the primary examination, shown by the numbers subsequently rejected. 374 per 1,000 failed to pass on the secondary inspection, and 5 per 1,000 were found unfit within three months, making a total of 379 unfit in every 1,000 passed on first examination. Fluctuations from year to year are of little importance in a case of this kind; but we may mention that the rate of secondary rejections was *higher* by 19 in 1890. The rate is highest for England and Wales (385); Ireland being next (369); Scotland (341); and "British Colonies and Foreign Countries" lowest (318). Ireland supplied 116 recruits per mille. Why so many recruits should be accepted only to be rejected immediately, or within three months afterwards, is still more wonderful when we observe the causes of rejection; some of which, at least, ought to be detected on the most superficial examination. Taking from Table V. (p. 37) those causes which led to more than 10 per mille of rejections, we find them to be as follows:—Impaired constitution and debility, 19; defective vision, 40; disease of heart, 17; varix, 16; loss or decay of many teeth, 11; varicocele, 13; defects of lower extremities, 16; flat feet, 11; under height, 27; under chest measurement, 93; under weight, 32.

So much for the recruits we do *not* get. Let us see what manner of "men" are actually admitted to the British army. As to age: 360 per 10,000 were "boys under 17"; 4,751 per 10,000 were between 17 and 18. "Very nearly half—47·5 per cent—of the recruits passed fit for service in the army were between 18 and 19 years of age." As to height: 393 per 10,000 were under 5′ 3″, and 1,097 from 5′ 3″ to 5′ 4″. The largest number (2,077 per 10,000) measured 5′ 4″ to 5′ 5″. 58 per 10,000 were 6 feet and upwards. As regards capacity of chest: 335 per 10,000 measured less than 31″, and the preponderating measurement was between 33″ and 34″. Of the capacity represented by this, 12,791—3,358 per 10,000—were finally passed. In estimating the physique of an army the proportion of weakly men likely to break down on active service is the thing to be considered. Averages are useless, except as tests of improvement or deterioration. We quote, however, the passage in which the average results of the year's recruiting are stated and compared with those of 1890, italicising a few important words:—

"From the foregoing tables it has been calculated that, *excluding boys under* 17 *years of age*, the average age of recruits finally approved during the year was 19·2 years, as compared with 19·1 in 1890, the average height was 5 feet 5·6 inches, the same as in the previous year, the average weight 122·3 lbs., an increase of 2·3 lbs., and the average chest measurement 33·4 inches, as compared with 33·5 inches in the preceding year."

Let us now see the effect of venereal poisons upon the efficiency of this material. The total incapacity due to these causes is not stated in the report. It will sufficiently answer our purpose to take the Indian figures; especially as the efforts of the Medical Staff in India to check the actual and potential ravages of venereal diseases are being baffled and discredited. The European garrison in India exceeds 60,000 men. Of these, 5,309 were constantly inefficient through sickness—80 per 1,000. We are obliged to take the three commands separately. In Bengal the ratio of men constantly sick from *primary syphilis* and *simple venereal ulcers* was 12·40 per 1,000; for *secondary syphilis*, 6·07; for *gonorrhœa*, 11·47; total, 29·94 per 1,000; "representing a loss of 1,203·68 men to the efficient strength of the force." To this should be added other cases of venereal origin, "chiefly inflammation and suppuration of the lymphatic glands of the groin from venereal infection." These raise the rate to 30·9 per 1,000. Further: "While the admission ratio for secondary syphilis has risen from a quinquennial average (1886–90) of 40·8 to 60·2 in 1890, and 58·6 per 1,000 in the present year, the constantly sick rate has steadily increased from 3·78, the average, and 5·85 in the preceding year, to 6·07 per 1,000 in 1891, and the average duration of each case from 33·83 days, the quinquennial average, to 35·46 days in 1890, and 37·83 days in the present year."

In Madras 13·81 per 1,000 were constantly incapacitated by primary venereal sores; 8·92 by secondary syphilis; and 9·22 by gonorrhœa; total, 31·95 per 1,000. In Bombay the corresponding ratios were 13·63, 4·43, and 10·93; total, 29·00.

Six papers are appended to the report. The most important of these is Surgeon-Captain Lambkin's, *On the Hypodermic Administration of Mercury in the Treatment of Syphilis.* The method has been discredited in consequence of its alleged painfulness and its supposed tendency to produce tetanus and abscesses. In his hands the treatment has been most successful. Pain, he says, is obviated by the use of lanolin and carbolic oil, mixed into a cream.

with metallic mercury. No abscesses followed the injection of this "cream," and no pain was caused by the operations, which were nearly one thousand in number, in Mr. Lambkin's practice.

The Disease of Inebriety from Alcohol, Opium, and other Narcotic Drugs: its Etiology, Pathology, Treatment, and Medico-Legal Relations. Arranged and compiled by the American Association for the Study and Cure of Inebriety. London: Simpkin, Marshall, Hamilton, Kent, & Co., Ltd. 1893.

It is unfortunate that Societies bent on social reform should not confine their labours within their legitimate sphere. No profession is more sinned against than that of medicine: vegetarians, teetotallers, theosophists, and all other faddists attempt to forcibly drag medicine to do battle for them.

All our sympathies are with temperance advocates. We hold that drunkenness is a curse, and one which spreads misery far and wide; but, nevertheless, we love truth more than we abhor drunkenness, and must protest against the straining and forcing of medical teaching which we find in the volume before us.

Advantage is taken of names that have become historical to put forward views that have become obsolete and theories that have been exploded. For what other reason is Benjamin Rush brought forward in this volume? Had Rush not been the friend of George Washington he would have passed long since into deserved obscurity; as it was, the friendship cost Washington his life.

Again and again, numerous quotations giving half-truths, and often grossly inaccurate, are given, thus:—"Brühl Cramer, from a long examination of this subject, concludes that drunken parents are seldom prolific, and when so, the children are stupid, malicious, and full of mental defects."

Do we not find that the most prolific, intellectual, and progressive race in the world, the Anglo-Saxon, consumes more alcohol a head than any other?

The beer-drinking peasants of the Elizabethan age begot the most intellectual progeny the world ever saw.

If total abstinence conduces to intellectual superiority it seems strange that no negro ever did anything worthy of remembrance. The nearest approach to civilisation that teetotallers ever made was the Aztec rule in Mexico. Amongst civilised races teetotallers have done nothing but in season and out of season urge their fad.

In no branch of literature, science, or art has a teetotaller ever come to the front, and all of them that have passed beyond mediocrity since the beginning of the Christian era would not fill a tramcar. The book before us, with all its good intentions, is little more than a distortion of truth.

A Handbook of Local Therapeutics:—General Surgery, by R. H. Harte, M.D.; *Diseases of the Skin*, by A. van Hoelingen, M.D.; *Diseases of the Ear and Air Passages*, by Harrison Allen, M.D.; *Diseases of the Eye*, by G. C. Harlan, M.D. Edited by Harrison Allen, M.D. London: H. K. Lewis. 1893.

This is an unique work. In all other books on therapeutics the local action of the drug is subordinated to its general action. In this the local action alone is dealt with. That such a book is a convenience and of much value to the prescriber is unquestionable, but we hardly think that it is a necessity. The work, however, is well done, and the pages of the book abound with serviceable hints. We especially draw attention to the very valuable articles, "The Local Action of Remedies," "The Method of Using Remedies," "Local Treatment of Diseases of the Skin," "Local Treatment of Diseases of the Respiratory Tract," and those on the dressings of general surgery. There are two indices, one of remedies and one of diseases, both of which are very full.

To the busy man the book will be of great service in economising time and saving the labour of searching through pages of print for a local remedy which he will find this handbook gives at a glance.

A Guide to the Examination of the Urine. By J. Wickham Legg, F.R.C.P.; formerly Assistant Physician to St. Bartholomew's Hospital. Seventh Edition. Edited and revised by H. Lewis Jones, M.A., M.D., M.R.C.P.; Medical Officer in Charge of the Electrical Department in St. Bartholomew's Hospital. London: H. K. Lewis. 1893. Pp. 139.

This little book gives a good and concise account of the more ordinary methods of examining urine. In connection with each substance found in the urine its clinical significance is briefly

indicated. There are some illustrations of crystals, tube casts, &c., including several reproductions by photography of actual specimens of urinary crystals. We think, however, that a book of this size on the urine might have contained more illustrations.

An appendix describes the method of making a quantitative estimation of chlorides, urea, &c.

The directions are clear, and, as a rule, full. We only notice one serious omission: no mention is made of the fact that the addition of nitric or other acid sometimes causes a clear urine to become very turbid, owing to urates, which have been in solution, becoming insoluble in the more acid fluid.

In describing the guaiacum test for blood, a fresh solution of guaiacum in spirit should have been recommended instead of "tincture of guaiacum." The tincture often fails to give the reaction owing to its not having been freshly made.

Essays on Rural Hygiene. By GEORGE VIVIAN POORE, M.D., F.R.C.P. London: Longmans, Green & Co. 1893. Pp. 321.

THIS is a volume of essays, some of which have been previously published, whilst others appear for the first time; all, however, form a connected series. After an Introduction in which the essays are grouped together, there is a chapter on concentration of population in cities. England and Wales have about 18½ millions belonging to town, and 10½ millions to country districts. The reason is that railways, telegraphs, telephones, &c., render it easier to work from a centre, and so instead of increased facilities for travelling allowing people to live further away, it has the contrary effect. One of the results is physical deterioration and higher death and sick rates. A London fog has, in one fortnight, occasioned 1,442 extra deaths.

The existence of water under pressure has altered conditions of life, and houses are built much higher than in old cities. Now the number of people per acre is of the utmost importance, and, whether they live in tenements, model dwellings, flats, or residential mansions, overcrowding of ground space can exist. Water-carriage of sewage has made another change; formerly houses had to have enough curtilage to provide a well and a place for the disposal of sewage, but now a pipe brings in water, a pipe takes out sewage and a bin emptied daily does for other refuse, and so houses of enormous height, and holding

enormous populations are built in crowds with no curtilage to speak of. Height and population are everywhere in towns increasing and curtilage diminishing, and in country districts people are allowed to build houses with deficient curtilage and allotments will have to be provided at the cost of the ratepayers and at inconvenient distances.

Chapter II. deals with the importance of returning all used-up materials to the soil—the proper destiny of organic refuse; the best method is immediate burial just below the surface of the soil. Chapter III. is on the shortcomings of some modern sanitary methods, and the evils of water carriage are pointed out. The increase of death-rate towards the centres of dense population is shown. The author calculates that $\frac{1}{30}$ acre should be given to each family, and that the sewage should be used on this land; that would give, allowing for roads, some 64,000 people to the square mile, a quite sufficiently dense population.

The "Living Earth" is a continuation of the same plea of giving back the sewage directly to the soil; some interesting experiments as to filtration of urine, &c., through earth are given, the great power that the earth has to deal with organic liquids and solids being shown. Other chapters carry the argument still further, and the advantage of the old-fashioned privy over the more modern cesspool is shown and pipe drains are condemned:—

"Cesspools must be written down as the most immoral of all insanitary subterfuges."

"Closed sewers should only be resorted to in cases of the direst necessity, and with a full sense of their danger."

It will be interesting to note the effects of the recent substitution of a cesspool for a privy at a railway station not far from Dublin. The privy used by station officials and passengers was not emptied since the building of the railway until this autumn. A cesspool with good water supply, but, apparently, no overflow, has been substituted. It will probably arrange about its own overflow to the discomfort of those using the station, and do more evil than its foully-smelling predecessor!

The author gives an interesting account of his own experience at Andover, where he owns a garden of some two acres. It was waterlogged and unhealthy owing to small buildings near at hand; these he bought, removed drains, substituting pails, and made other improvements, the water fell nine inches and the

daily application of the pail contents (from some hundred individuals) has brought the garden to more than average fertility. With the pride that is at once so common and so pardonable in amateur gardeners, the author gives several plates of fruit and vegetables grown in his garden.

So enthusiastic is the author about nitrification, that he hardly gives cremation fair play. The alleged exaggerations of cremationists when speaking of the horrors of inhumation, cannot be greater than the author's exaggerations of the evils of cremation; and when the glories of nitrification have been descanted on, all the use that the author can suggest for cemeteries is to grow firewood in them. A small result after all, though it might lead to crematory and cemetery living side by side, one growing fuel for the furnaces of the other!

The book is one which cannot be read without interest and gain. The main thought running through it is, that as every individual needs a certain amount of land (some $\frac{1}{100}$ acre or so) this land should be given as curtilage to his house, and that he should not be squeezed into a tenement, flat, or residential mansion with some of his portion of land forming a portion of the distant area of catchment of his water supply, some part of that fouled by the city's sewage, and some—6 ft. × 2 ft.—in the neighbouring cemetery. Indeed, so strongly does the author write, that we suspect he would sympathise with the American woman who worked hard all her life, and finally said to her husband, "John, when I am dead, bury me in the garden, that I may help to shove up the potatoes."

A Treatise on Hygiene and Public Health. Edited by THOMAS STEVENSON, M.D., F.R.C.P. Lond.; Lecturer on Chemistry and Medical Jurisprudence at Guy's Hospital; and SHIRLEY F. MURPHY, Medical Officer of Health of the Administrative Council of London. Vol. I. London: J. & A. Churchill. 1892. 8vo. Pp. 1013.

THIS book on hygiene is the largest which has as yet been produced by English authors. Although only the first volume of the work, it contains more than 1,000 large pages. The typography and paper are excellent, and the illustrations are on a par with the rest of the book. The contributors are as follows:—Dr. S. Monckton Copeman, Dr. W. H. Corfield, Dr. T. W. Hime, Dr.

E. W. Hope, Surgeon H. G. Howse, Dr. Sidney H. C. Martin, Dr. J. Lane Notter, Dr. Louis C. Parkes, Dr. G. V. Poore, Mr. W. N. Shaw, F.R.S.; Mr. P. Gordon Smith, F.R.I.B.A.; Dr. T. Stevenson, Mr. G. J. Symons, F.R.S.; Surgeon F. Treves, Dr. W. H. White, Dr. C. T. Williams, and Mr. Keith D. Young, F.R.I.B.A.

The volume consists of monographs written by these well-selected authors on the following subjects—air, water, soil, disposal of refuse, inspection of meat, slaughter-houses, hospital hygiene, food, clothing, warming and ventilation, the dwelling, meteorology, offensive and noxious trades, baths, climate, and physical education.

The volume opens with an article on Air, the purely chemical part of which might be more extended. It embraces only 28 pages, or about one-fortieth of the contents of the volume. The statistics in reference to the mortality caused by unhealthy trades would be better discussed under the head of noxious businesses. Ozone is said to be composed of "3 molecules" of oxygen. It should be 3 atoms. We object to the term "compound molecule" used in reference to ozone, for all molecules of the gases are necessarily compounds. We also object to the statement that ammonia exists in the air in a free or uncombined state; it always exists there as a carbonate, nitrate, or other salt. Although much of the article is taken up with matters which pertain to ventilation rather than to air, we have good and clear directions given for the determination of carbonic acid in air, and the estimation of oxidisable organic matter. For the determination of other compounds, such as nitrous acid, no quantitative processes are given. We would have liked to see a little more space devoted to ozone, to which remarkable allotropic form of oxygen we believe the blue colour of the sky is due. On the nature and functions of this "scavenger of nature" much light has recently been shed.

The article on Warming and Ventilation by Mr. W. N. Shaw is one of the best in the work, and it is well illustrated. Although a free use of mathematics is made, yet the principles of ventilation are explained in a very simple and easily understood manner, and the information is thoroughly practical. In reference to gas stoves, we are told that, however convenient they may be, the heat derived from them costs eight times as much as that obtained from coal. The most economical gas stove or fireplace is that in

which the gas is concentrated upon as small a surface as possible, so as to raise the temperature of the asbestos, or whatever the solid material may be, to the highest possible temperature.

Quoting from Professor Carnelley's Report to the School Board of Dundee (Winter, Duncan, & Co., Dundee), the author informs us that in the heating of the public schools in Nottingham five times as much coal per head is consumed than in the Dundee schools. One open fire school in Dundee burns 23 lbs. of coal per head per annum, whilst one of the public schools in Leeds consumes 239 lbs. per head. These differences are not due to differences in systems of heating, for they exist no matter what methods are adopted. No explanation is afforded for these extraordinary differences. An interesting comparison is made in reference to the advantages and disadvantages of various systems of heating. As to first cost, stoves are most economical; next, open fireplaces; then hot pipes; and lastly, hot air ventilation. As to annual cost, pipes stand first; next, stoves, open fires, and, except in very large schools, mechanical ventilation. For proof of an equable distribution of heat and minima of draughts, the mechanical system exceeds all the others, and, if cost be not a barrier to its adoption, it ought to be in use not only in schools but in hospitals, reading rooms, theatres, &c.

Mr. Symons' article on Meteorology is, as might be expected, coming from such a source, in every respect up to date. The greater portion is taken up with a description and management of meteorological instruments. We should have liked a little more information on clouds, fogs, and atmospheric electricity. The article which follows Mr. Symons' deals with Climate in relation to health, is from the pen of Dr. C. Theodore Williams, and there are no repetitions in it of the statements made in the article on meteorology. In many of the other monographs we find exactly the same subjects treated, and not always concordantly, by two or more of the writers, but this is what might be expected in a work where different authors treat upon subjects which are correlated. On the whole, the article on climate is an excellent one though not of any great length. The author's style is clear, and he gives a large amount of interesting and useful information without using a superfluous word.

The article on Water is by Dr. Stevenson, the well-known toxicologist to the Home Office. It deals with the origin, storage, filtration, relative qualities, and analysis of this indispensable

liquid. The authorities quoted are the most recent and the most reliable. The question—Is hard water unwholesome? is fully discussed, with the result that it is declared to be wholesome if the hardness is temporary—*i.e.*, due to calcium carbonate, and not to the presence of earthy sulphates, chlorides, and nitrates. The merits of various kinds of filters are considered, and a preference given to the "Chamberland-Pasteur." This consists of unglazed porcelain, and acts mechanically. It is stated to be capable of preventing the passage of the pathogenic microbes. This filter is rather dear. We have a somewhat similar but cheaper one in the Birkenfeld filter, which is now coming into use. The relation of impure water to cholera, typhoid fever, and other diseases is, as might be expected, treated pretty fully.

The article on the Influence of Soil on Health is contributed by Dr. S. Monckton Copeman, Lecturer on Physiology at St. Thomas' Hospital. It begins by describing the effects produced on soils by micro-organisms. The various diseases which have been proved or suspected to be due to the influence of soils are detailed, with special reference to recent bacteriological researches.

Dr. Sidney Martin, of University College Hospital, deals with the subjects of Food and Diet. In enumerating the diseases transmitted to man through the medium of milk he makes no mention of typhoid fever. Dr. Hope's article on meat inspection follows Dr. Martin's on food, and to medical officers of health it is one of the most useful in the work.

Dr. Thomas W. Hime (a graduate of Dublin University), is the author of the article on Offensive Businesses, which describes most of the manufactures that are injurious to health. It abounds with useful information for the health officer. The chemistry of the article is, perhaps, a little rusty. White-lead is not $PbCO_3$, but a mixture of that body and PbO, OH_2. Two-thirds of the phosphorus and not one-half are distilled from the calcium metaphosphate used in the preparation of phosphorus. Chlorine is treated of in two places, and with some repetitions. Why not in one place only? The author, in speculating as to the way in which chloride causes death, does not seem to be aware that Sir C. A. Cameron, and later Professor Binz, have shown that the gas is taken into the circulation, that it may be detected in the brain, and that it is a neurotic poison.

The remaining articles in this work are all the products of the pens of authors thoroughly competent to deal with them; and the

division of labour in the production of this neat work has enabled each of the sections of it to be finished as by a master-hand.

We cordially recommend this book, not only to medical officers of health, but to all who take an interest in the great subject of public health.

The Cholera Epidemic of 1892 *in the Russian Empire: with Notes upon Treatment and Methods of Disinfection in Cholera, and a Short Account of the Conference on Cholera held in St. Petersburg in December*, 1892. By FRANK CLEMOW, M.D. Edin., Member of the Epidemiological Society of London, &c. London and New York: Longmans, Green & Co. 1893. Pp. 123.

RUSSIAN experience of cholera is second only to Indian. Since 1823, when first the disease invaded Russian soil, there have been at least twenty-seven years in which it prevailed more or less widely in the country. In each of seven of these epidemics the mortality exceeded 100,000. In those seven years (1831 the first, 1892 the last), 3,754,104 cases were registered; with 1,508,282 deaths—a mortality of 40·18 per cent. In those seven epidemics the death-rate ranged from 36·4 per cent. in 1872 to 45·8 in 1892. In two only of these years, in 1831 and in 1848, did the numbers of cases and of deaths exceed those of 1892, the year to which Dr. Clemow's chapters are devoted. He has had access to all Russian sources of information on the subject, and his account of the epidemic is most satisfactory. The greater part of the work has already appeared in the columns of a contemporary.

In May, 1892, cholera appeared in Meshed, a Persian town about 65 miles from the Russo-Persian frontier. It entered Russia thence, and spread rapidly, finding congenial soil. From Russia it passed to Germany, Austro-Hungary, Belgium, Holland, and France. The unprecedented rapidity of its spread through Russia was a natural consequence of the improved railway communication, and the multiplication of travellers. In Asiatic Russia (exclusive of the Caucasus) 89,175 cases were reported, with 46,831 deaths (52·5 per cent.), from May to November. A table gives the statistics of the epidemic in the provinces of Central Asiatic Russia and of Siberia; on which the author makes the following remarks:—

"From these figures it will be noted that the intensity of the *cholera process*, indicated by the proportion of fatal cases, has borne no constant

relation to the intensity of the *epidemic*, as shown by the proportion of population attacked by the disease. Thus, in Transcaspia, where out of every 100,000 inhabitants 400 suffered from cholera, 54 per cent. of the cases proved fatal; whilst in Tobolsk, where, out of the same number of inhabitants, 1,865 persons, or nearly five times as many as in Transcaspia, suffered from the disease, only 48·4 per cent. of the cases succumbed. The extraordinary high death-rate of 70·5 in the Syr Daria province cannot but raise the suspicion that many cases that recovered have not been reported from this district."

There is one predisposing cause which especially favours the wide and rapid spread of cholera in Russia: the prevalence and severity of gastro-intestinal catarrh. No other disease produces in ordinary times so high a total of mortality. In six large towns, representative in position of all parts of the Empire, in three years (1887–9), 41,649 deaths were due to this affection: diseases of the respiratory organs destroying only 31,821, and tuberculosis 27,916 lives. This extraordinary prevalence of gastro-intestinal catarrh is attributable to the food which the Russian peasant eats and the fluids which he drinks. His rye-bread is black, acid, and irritant. "Soup made of fermented cabbage, dried fish, meat in no great quantity, salted herring, raw cucumbers and melons, with *vodka* and *kvass* complete the diet."[a] Ten samples of *kvass* from St. Petersburg public-houses were examined by the official analyst, when cholera broke out in the city, and all were reported unfit for human use. "In the sediment found in each bottle was discovered a mass of lower organisms, infusoria, dust, fragments of rag and small stones. One sample was found to swarm with the 'flour-tick' (*acarus farinæ*). In some of the samples were found small shot which had been used for cleaning the bottles. If such be the condition of the *kvass* consumed in the capital, it is scarcely likely that that drunk in the villages is better." Water-drinkers fare little better than those who delight in *kvass*. From several instances given by Dr. Clemow of the connection of bad water-supply with gastro-intestinal catarrh and cholera, we select Astrakhan, for example, here:—

"The water-supply is worse, gastro-intestinal catarrh is (with a single exception) more prevalent, and the cholera epidemic was more severe . . . . than in any other town in Russia . . . . The water distributed to the inhabitants of Astrakhan contains in solution 17·3

[a] Vodka is a rye-spirit. Kvass (frequently adulterated) is made from fermented black bread.

parts of organic matter in 100,000, more than four times the highest limit compatible with fitness for use. If, further, the suspended matters be taken into account, the water is found to be seven times more polluted than the worst potable water. It is passed through filter-beds, but actually becomes fouler in the process than it was before, and the inhabitants frequently refuse to use the water from the water-works, preferring to take their supply direct from the river or from springs. Of the total annual deaths in Astrakhan one-third, and sometimes more, are due to gastro-intestinal catarrh. This proportion is only exceeded in the town of Saratof. Finally, the absolute and relative numbers of cases and deaths from cholera were higher in Astrakhan than in any other town in Russia. Amongst a population of only 95,000 there were recorded 4,798 cases and 3,160 deaths. The case-rate was thus 5,050 and the death-rate 3,326 per 100,000 inhabitants. The per-centage of deaths to cases was 65·86—that is to say, very nearly two-thirds of the cases proved fatal."

In connection with predisposing causes it is not a little remarkable that the districts which suffered most from famine in 1891, do not seem to have been the most severely visited with cholera in 1892. This was, at least, the opinion of the majority of the speakers at the Cholera Conference assembled in St. Petersburg last December. In some districts, where the famine was most severe, typhus, typhoid and scurvy followed; but cholera proved even less fatal than elsewhere. Dr. Clemow concludes "that the weakened condition of the peasants in the famine-stricken governments did not predispose them to contract cholera;" and he suggests the generalisation that "the pre-existing state of health of a given population is a factor of little if any importance in affecting the spread or fatality of a cholera epidemic." He cites the case of 1832–3 as a parallel:—

"In the years 1832 and 1833 the southern and central governments of European Russia were visited by a famine that had never been equalled before, nor has it since, in the fearful distress which it caused amongst the peasantry. Starvation and its attendant ills, scurvy and fevers, typhus and typhoid, carried off the population by tens and even by hundreds of thousands. On June 15th, 1833, cholera appeared in the government of Voronezh, and spread thence to twenty-four other governments; and yet, though the epidemic was widely spread over the area that was suffering from famine, it at no time, and in no part of this area, attained any great intensity. Only five governments were at all severely visited by cholera, and in none of them did the number of deaths recorded rise as high as 100 per 100,000 inhabitants. In the whole course of this

epidemic there were reported only 14,428 cases and 5,330 deaths. The proportion of deaths to cases was thus rather less than 37 per cent."

It cannot be doubted, however, that famine and its attendant diseases had cleared off some thousands who would have died of cholera if they had lived long enough.

We commend Dr. Clemow's seventh chapter, on the Method of Spread of Cholera, to those physicians, if any such there be, who doubt that cholera spreads along the lines of human communication; the dissemination being more rapid when the course is along a great river, like the Volga, than by railway lines. "The evidence is indeed overwhelming that cholera does not originate *de novo*, but that every case of the disease is the result, directly or indirectly, of some pre-existing case."

A word, in conclusion, as to quarantine. "The principle and practice were condemned unanimously, and in no halting terms," by the St. Petersburg Conference.

"The Report declares that quarantine has no scientific basis, that it leads to great annoyance and loss, that it demands an immense expenditure for its proper carrying out, and that it does not attain its end, as evasion of quarantine is always possible. The report, therefore, recommends that quarantine should be replaced by a system of inspection, isolation of sick, and disinfection."

Report of a Committee appointed by the Clinical Society of London to investigate the periods of Incubation and Contagiousness of certain Infectious Diseases. Supplement to Volume the Twenty-fifth. London: Longmans, Green, & Co. 1892. 8vo. Pp. ix–225.

In the introduction to this valuable Report we are reminded that in 1878 the Clinical Society of London appointed a Committee to investigate the periods of incubation and contagiousness of small-pox, scarlet fever, typhus fever, diphtheria, enteric fever, erysipelas, varicella, mumps, and other communicable diseases. In November, 1888, this Committee was reconstituted, and a circular letter was sent to a number of medical practitioners in the most sparsely-populated parts of the country, who, in view of their remoteness from large centres of population, might have peculiarly favourable opportunities of tracing the source and progress of infection.

The letter, which was also published in the medical journals, asked for particulars of cases likely to throw light on the periods of incubation or of contagiousness of the zymotic diseases commonly observed in the United Kingdom. Many replies to this letter were received. Sir George Buchanan also allowed his complete collection of Reports made to the Medical Department of the Local Government Board since 1878 to be examined. The material thus obtained was arranged, condensed, and tabulated in the Report before us, which was prepared for publication by Dr. Dawson Williams, one of the Honorary Secretaries of the Committee. The members of the Committee, as constituted in 1888, were—Sir William H. Broadbent, Bart., M.D., Chairman; Sir George Buchanan, K.C.B.; Drs. Cayley, Barlow, Alfred Hill, Isambard Owen, R. Thorne Thorne, C.B.; Alder Smith, and R. W. Parker, with Mr. Shirley F. Murphy and Dr. Dawson Williams as Honorary Secretaries.

The diseases upon which the Committee report are—small-pox, varicella, measles, rubeola (that is, Rötheln), scarlet fever, influenza, whooping-cough, diphtheria, enteric fever, mumps. A separate section is devoted to each disease, the sections being arranged in alphabetical sequence for convenience of reference.

The term "period of incubation" has been taken in its ordinary sense throughout the Report to mean the interval between exposure to a source of infection and the development of the earliest recognisable symptoms. The Committee observe that in certain cases—in diphtheria, for instance, and perhaps in measles—there is some evidence that continuous—*i.e.*, prolonged—exposure to a source of infection appears to shorten the period of incubation.

In accordance with a suggestion made by Dr. Donald Macalister (*Practitioner*, Vol. XLIII., page 123), which we cannot approve, the adjective "diphtherial" has been systematically used to express the specific process due to the disease diphtheria, the term "diphtheritic" being used for other inflammatory processes not due to true diphtheria. Surely it is a contradiction in terms to call such processes "diphtheritic," it being conceded that they are not such in any sense.

To give an idea of the scope of the work we will quote the "Conclusions" about the very disease in question—namely, diphtheria. The Committee say that the incubation period does not, as a rule, exceed four days, and is more often two days than any other period. Not infrequently it extends to five, six, or seven

days, but it is doubtful whether it ever exceeds the last-named period.

A person may be infected by a patient suffering from diphtheria (*a*) in the incubative stage; (*b*) during the developed attack; (*c*) for a period of long but uncertain and probably varying duration after apparent recovery. In such cases of late infection some unhealthy condition of throat will, as a rule at least, be found to have persisted, or, possibly, to have recurred.

The infection of diphtheria can be retained in clothes, carpets, and other fomites for months—perhaps years. It may be derived from cases so mild that the patient never comes under medical treatment, or presents symptoms so little characteristic that their true nature is not recognised even after medical examination.

One of the least satisfactory sections in the Report is that devoted to "Rubeola"—a synonym for epidemic rose-rash, or Rötheln, which has been chosen with singular infelicity, and with too great deference to the German school. The term "rubeola" will certainly lead to confusion between the disease meant and true measles, which in former days was extensively known by this name, and the following paragraph is so extremely vague as to excite suspicion of inaccurate observation:—"The incubation period of rubeola is, *as a rule to which there are many exceptions*" (the italics are ours), "some period more than two and less than three weeks. Eighteen days is, probably, the usual period. In a considerable number of cases it is a day or two less than two weeks, in a few it is only eight or nine days, and it is possible that in a small number it may be as short as six or five."

The sections on measles, scarlet fever and small-pox are particularly full and instructive. Under the last heading, Mr. Frank Colclough has contributed an interesting note founded upon the experience of the small-pox hospital ships of the Metropolitan Asylum Board from the time Dr. Birdwood became Medical Superintendent. It would appear from this statement that a very large proportion of persons vaccinated or re-vaccinated successfully at or shortly before the commencement of exposure to infection escape infection entirely. In some instances, however, on or about the twelfth day the individual suffers from an attack of illness characterised by headache, pyrexia, and other symptoms of fever, and accompanied sometimes by an erythematous rash. Recovery occurs in two or three days. This illness, which is manifestly a *variola sine variolis*, is of sufficiently common occurrence to have

come to be recognised by the staff as a kind of "acclimatisation fever." In other cases, again, in addition to headache and malaise, with or without pyrexia, a few abortive papules appear. Such cases are capable of conveying the infection to susceptible persons. Finally, in a small minority of cases a definite attack of modified discrete small-pox occurs.

When vaccination or re-vaccination fails to prevent infection entirely, it does not appear to have any effect in altering the period of incubation.

For much interesting and novel information we must refer our readers to this Report itself, and in doing so we would add our tribute of praise for the able way in which Dr. Dawson Williams has prepared the Report for publication.

The Health Resorts of the Canary Islands in their Climatological and Medical Aspects. By J. CLEASBY TAYLOR, M.D. Edin., M.R.C.S. Lond., con titulo Español Las Palmas. London: J. & A. Churchill. 1893. 8vo. Pp. 95.

WRITTEN in the first instance as a thesis for the degree of Doctor of Medicine in the Medical Faculty of the University of Edinburgh, Dr. Cleasby Taylor's very instructive and entertaining book comes before us with the *imprimatur* of that great seat of learning. This fact disarms hostile criticism, supposing such were contemplated by the reviewer.

On Tuesday, the 1st of August, in this year, we had the good fortune to be present at the ceremony of "Capping" in the University of Edinburgh, when a gold medal was awarded to Dr. Taylor as a prize for the work which now lies before us. We have since then read the book with care, and are in a position accordingly to endorse the favourable verdict of his Alma Mater on the merits of Dr. Taylor's latest contribution to the climatology and history of the "Fortunate Islands."

The book is well arranged. It consists of eight "Sections" and an ethnological appendix on the Guanche race—its manners and customs, its craniological and skeletal peculiarities. This name Guanche was originally used only for the aboriginal inhabitants of Teneriffe, but is now applied to the original inhabitants of the whole group of islands known to the Greeks as *αἱ τῶν μακάρων νῆσοι* (the Islands of the Blessed), to the Latins as the Insulæ Fortunatæ.

In a brief history of what are now called the Canary Islands (*Lat.* canaria, belonging to dogs) Dr. Taylor recalls the fact that the wine made from the vineyards of Gran Canaria was in great request in the olden time. Thus Shakespeare puts into the mouth of the host of the Garter Inn the words, "Farewell, my hearts; I will to my honest Knight Falstaff, and drink canary with him." A more modern industry, which in its turn is dying out, owing to the introduction into commerce of aniline dyes, was the cultivation of the cochineal insect (*Coccus cacti*). In 1826, it was found that this insect throve on the *Cactus opuntia*, a plant which flourished on the islands. From 1830 to 1869 this industry brought prosperity to the inhabitants, who, since 1884, have had to depend chiefly on the exportation of bananas, tomatoes, potatoes, oranges, &c., and on the opening up of the islands as health resorts. All this has been rendered possible by the development of the principal ports of Grand Canary and Teneriffe into coaling stations for ocean-going steamers.

A short section (II.) on the geographical and physical features of the islands, and their relation to the climate, is followed by a very full account of the meteorology of the group.

Section IV. describes the localities suitable for health resorts and their distinctive characteristics, especially in respect to accessibility by land or sea, accommodation, and altitude. It is quite startling to read that at the present time nearly 250 steamers call every month at Las Palmas in Grand Canary and at Santa Cruz de Tenerife. These steamers are bound for all parts of the world from ports of the United Kingdom, Germany, Spain, and Italy.

In Section V., Dr. Taylor considers the climate of the islands in relation to health and to disease, the various localities and their relation to disease, and the future of the islands as health resorts. In Section VI., on the Public Health of the islands, information is given as to the birth-rate and death-rate (general and phthisical), drainage, and water-supply.

Section VII. is devoted to the natural mineral waters, of which there are several in the Canary Islands, the chief being—Zabinosa, in the island of Hierro; Charco Verde, in La Palma; Santa Catalina, in the island of Grand Canary—in all of which chloride of sodium is the principal constituent; Firgas (*Agua Agria*, an earthy or calcareous water), and Agaete (*Agua d'Agaete*, a chalybeate water, containing iron in the form of ferrous carbonate, 10 grains to the gallon, with carbonates of lime and magnesium).

Section VIII. gives a comparison with other health resorts by means of meteorological data.

The book ends with a useful list of works consulted by the author.

We can heartily recommend Dr. Taylor's "Health Resorts of the Canary Islands" both to the medical profession and to the lay public in search of a mild and equable winter climate.

Auscultation and Percussion: together with the other Methods of Physical Examination of the Chest. By SAMUEL GEE, M.D., F.R.C.P.; Physician to St. Bartholomew's Hospital. Fourth Edition. London: Smith, Elder & Co. 1893. 8vo. Pp. 327.

TEN years have elapsed since the third edition of Dr. Gee's well-known "Auscultation and Percussion" was published. The present issue differs but little from its predecessor, but a comparison of the two books shows that the author has not been idle during the past decade. Every page bears traces of careful revision and judicious pruning. Many footnotes with references to classical medical works have disappeared. The result is that the work now runs to only 327 pages, against 344 in the third edition.

Dr. Gee has apparently returned to his classical studies as the years roll by, for not only is there an apt Latin quotation at the end of several chapters, but the author has even invoked the aid of the Muse in dedicating his book to the memory of Laennec, which he does in the following neatly-turned hexameter lines:—

> "E TENEBRIS TANTIS TAM CLARVM EXTOLLERE LVMEN
> QVI PRIMVS POTVISTI ILLVSTRANS PECTORIS ANTRVM
> TE SEQVOR O GALLÆ GENTIS DECVS INQVE TVIS NVNC
> FIXA PEDVM PONO PRESSIS VESTIGIA SIGNIS
> NON ITA CERTANDI CVPIDVS QVAM PROPTER AMOREM
> QVOD TE IMITARI AVEO."

There is no preface to this edition, but at the end of the book Dr. Gee appends this sensible "Note":—

"In the foregoing pages I have taken great pains with the terminology; and I have used technical words with strict adherence to their original meaning. I have not taken upon myself to pervert the meaning of words already well defined, nor have I invented new words to denote signs already well denominated. Much of the difficulty of teaching

auscultation and percussion to students is due to neglect of these plain rules which everyone who uses technical terms may be expected to follow, or to give good reasons for not following."

In his pages Dr. Gee is as good as his word, for at page 123 he says—"Rale, rhonchus, rattle; these words are synonymous. . . . Rales are of three kinds: crepitant, mucous, and sonoro-sibilant." Needless to say that this is not at all the terminology or classification of sounds which was adopted by the Ninth International Medical Congress at Copenhagen in 1884. However, Dr. Gee's conservatism is attractive; and we are of the same opinion now as in 1883 that this text-book of physical examination of the chest is one of the best of its class which has ever issued from the press.

Introduction to the Catalogue of the Collection of Calculi of the Bladder, upwards of one thousand in number (besides foreign bodies), removed by Operation. By SIR HENRY THOMPSON, F.R.C.S., M.B., London; Surgeon Extraordinary to H. M. the King of the Belgians; Consulting Surgeon and Emeritus Professor of Clinical Surgery to University College Hospital, London; Member of the Société de Chirurgie de Paris, &c. This collection was presented in 1892 to the Hunterian Museum of the Royal College of Surgeons in London, where it is now deposited with copies of the Catalogue and introduction. London: J. & A. Churchill. 1893.

SIR HENRY THOMPSON'S brief introduction to the catalogue of his collection of vesical calculi, will be read with great interest by all who desire to know fully the present position of this branch of surgery, in which advances as great as those of any other department of surgery have been made in the last few years. With unrivalled opportunity for the study of the subject, Sir Henry Thompson gives, in thirty-nine short pages, a complete summary of all his own experience, sufficient to guide the surgeon in the selection of the method suitable to any particular case. He thus describes the quality of the information his introduction affords:—"Whatever I offer here may be accepted as the outcome of my entire work in this department of surgery. Not a single case has been omitted. My object has been to present here an accurate, although necessarily very brief study of the data obtained chiefly

in relation to treatment and its consequences. And here, let me be permitted to state respecting treatment at the outset, that I am not conscious of having entertained undue predeliction for any particular methods, and have therefore selected them, according to my judgment, for the requirements of each individual patient."

This is just such guidance as the practical surgeon who enjoys but few opportunities for acquiring experience of stone cases, likes to fall back on when called to treat a patient suffering from stone. The total number of patients contained in Sir Henry Thompson's list is 893, on whom were performed 1,013 operations, with a mortality of 99. In considering this summary, attention must be directed to the fact that in dealing with the most numerous group of cases, stone in the bladder of adult males, Sir Henry Thompson excludes from his list all in which the calculus weighs less than 20 grains, as he declines to name the treatment of particles of gravel of 1 or 2 grains in weight in "An Operation for Stone in the Bladder." Of these he says, "Had I included all these examples in my series of calculi, the total number would have reached at least 300 cases more than it now does." This exclusion of trivial cases makes the series of all the more value as a practical guide in treatment, while it removes the publication of our author from the suspicion of mere advertisement which hangs about the too familiar heading—"One hundred cases treated without a death."

A Handbook of Ophthalmic Science and Practice. By HENRY E. JULER, F.R.C.S. Second Edition. London: Smith, Elder & Co. 1893. Quarto. Pp. 549.

WE must congratulate Mr. Juler upon the second edition of his handbook, of which, he says, "considerable alterations and additions have been made both in the text and in the illustrations."

We gave so full a review of the first edition in 1884 that it is unnecessary to do more than notice one or two points in the present.

In the description (p. 27) of the blepharo-cheiloplastic operation, originally suggested by Van Millingen, no mention is made of the very important modifications introduced and practised at

St. Mark's Ophthalmic Hospital, Dublin, where the operation has been brought to such perfection.

He speaks also of the "shrinking of the mucous membrane immediately after separation from the lips." In our experience this shrinking is almost entirely absent, and very little, if any, allowance need be made for it. The whole account of the operation is most inadequate.

Again, in the treatment of stenosis of the nasal duct (p. 51), no mention is made of the method of using the styles intermittingly, the patient removing and reapplying them at intervals.

The book is nicely written, and has many good points, is well illustrated and well printed, but in some details, at least, not quite up to date. The author has, however, shown consideration for his many admirers, in supplying them, at page 436, with an excellent likeness of himself.

Wright's Improved Physicians', Surgeons', and Consultants' Visiting List. Compiled by ROBERT SIMPSON, L.R.C.P., L.R.C.S. 1894. Bristol: John Wright & Co. London: Simpkin, Marshall, Hamilton, Kent & Co., Limited; Hirschfield Bros.

IT will be best to let this neat Visiting List—apparently the first published for the year 1894—tell its own story in the words of its "Preface":—

"The objects in view in issuing this Visiting List have been—1. To economise space and provide the greatest amount of accommodation; 2. To economise the Practitioner's time by enabling him to write his patients' names once a month only instead of weekly as heretofore; and 3. To include a Consultants' Record, in which consulting practitioners may see at a glance the date and hour of their appointment, together with the name of the medical man in attendance.

"These advantages have been gained within the covers of a leather bound, thin, soft, and comfortable pocket book, upon paper of good quality, without inordinately increasing the price, and within smaller dimensions than has been hitherto attempted."

The price list for 160 patients monthly is as follows:—With flexible leather flap cover, without tuck, post free, 5s. 6d.; with cloth sides flush, for fitting in leather wallet, post free, 5s.; sealskin wallet, strongly sewn, with four pockets and pencil, to contain cloth list, post free, 8s. 6d.

PART III.

SPECIAL REPORTS.

A RETROSPECT OF OBSTETRIC AND GYNÆCOLOGICAL PRACTICE FOR TWELVE MONTHS.

By E. Hastings Tweedy, L.R.C.P.I., L.R.C.S.I.; Assistant Master Rotunda Hospital; Late House Surgeon, Steevens' Hospital, Dublin.

In reviewing the work done in the above subjects during the year we cannot but feel satisfied with the result. Thoughtful and unremitting attention has been expended on both branches, and we are confident that much of the work will bear permanent fruit.

The year has added confirmation to the belief that true asepticism cannot be obtained by mere cleanliness alone, but to achieve this end the free use of antiseptics is still necessary.

Much also has been done to place the different antiseptics in their proper spheres. It has been proved that boiling water (temp. 212° F.) is the ideal antiseptic for all instruments, and none but those capable of being so treated should ever now be used.

Corrosive sublimate (1 in 500) is still regarded as the most powerful and efficient disinfector of epidermic structures, and ought, therefore, to be used exclusively for the operator's hands, taking care, of course, to remove every particle of soap before immersion. On the other hand, its poisonous qualities, its instability when brought into contact with albuminous fluids and steel instruments, and the hardening of the skin which follows its application, have rendered its use obsolete as a uterine injection.

Jeyes' creolin (2 per cent. sol.) has appeared within the year to answer all the requirements of a safe and efficient intra-uterine antiseptic.

Lysol has come to be extensively employed, and its lubricating properties render it particularly serviceable, as by its use we can now dispense with greasy applications, none of which are found in practice to be free from risk.

The revival of symphysiotomy is undoubtedly the greatest advance which has been made in midwifery practice for some considerable time. Within the past twelve months it has been performed twice in the Rotunda Hospital, once in England, and several hundred times throughout the continents of Europe and America.

The excellent results obtained from this operation have effectually silenced any mere theoretical objections to its use.

The year's experience has almost conclusively proved it to be probably the safest of the major operations, comparatively easy in its execution, and free from the disadvantage of giving rise to a movable joint at the symphysis—an objection strongly urged against its employment a year ago. It will, undoubtedly, in the future be the operation employed in all cases of contracted pelvis where the deformity is not of an extreme degree (not below 2¾ inches in the conjugate, with a living fœtus in utero), and where there is no reason to believe that septic infection has been established. It is obvious that those conditions of ankylosis of the pelvic joints, as a Roberts' Naegele or coxalgic pelvis, must at all times prove a contra-indication to this operation.

Plugging the uterus with iodoform gauze in cases of alarming *post-partum* hæmorrhage, has become a recognised and very valuable method of dealing with this complication in spite of the theoretical objections urged against its use, especially in the London School. The advantages claimed for it are safety, efficiency, and rapidity in its application.

In the collapse following serious flooding, a new departure has occurred in the method of transfusion. The intravenous injection of enormous quantities of a 2 per cent. saline solution (3 to 4 quarts) has been found a reliable means of restoring the blood pressure.

Every one who has had to deal with a case of interstitial mastitis, knows how very unsatisfactory the treatment of the disease was when it consisted in early incision, poulticing, drainage tube, and irrigation with antiseptic solutions. A new method which promises a cure in eight or ten days will therefore be hailed as a decided advance in our knowledge.

The method of procedure is as follows:—As soon as pus forms, the breast is incised and a finger inserted into the abscess cavity, the diseased structures surrounding it being broken down by the exercise of force. The cavity is then plugged with moist iodoform

gauze, and a pad and tight bandage applied. The packing is renewed on two successive days, after which an ordinary dressing suffices, the lips of the wound being brought together, and a tight bandage still being used as a support to the breast. The patient is convalescent on the seventh or eighth day.

Turning to the treatment of diseases peculiar to women, we notice the decline in a remarkable manner of the electrical treatment of fibroid tumours. On the other hand, gynæcologists have come to look on myomata as not the harmless tumours we were but a few years ago taught to regard them. Twelve months ago the burning question centred on the treatment of the stump in hysterectomy for myomata. The introduction, however, of total extirpation in cases heretofore treated by the extra- or intraperitoneal method has proved so much superior to either operation that further discussion on this point is valueless.

The disadvantages of the latter operation—namely, greater difficulty of execution, prolonged anæsthesia, and severer shock to the nervous system—are found to be more than compensated for by the greater freedom from sepsis, pain, secondary hæmorrhage, and delayed convalescence. This operation has within the past few months been still further simplified by Professor Martin, of Berlin, who now removes the stump through the abdominal incision.

We cannot believe that Dr. Martin's operation for the resection of the Fallopian tubes will ever be of practical use. One has only to think of the narrow lumen of the tube, the tendency of all such dilated structures to contract, and the destruction of the ciliated epithelium which occurs in all tubal diseases, to be rendered sceptical as to the utility of this treatment.

On the other hand, the resection of the ovaries, as described and performed by Dr. Pozzi, of Paris, promises to be not only most interesting to scientific gynæcologists, but also of great practical value. By it we can remove the diseased part of the ovary, and yet leave the woman free from the stigma of barrenness. This operation will have its special field of usefulness in cases where the other ovary has become useless or been previously removed, and we feel confident that it will appeal to all gynæcologists as a great advance.

Yet another medical treatment for cancer of the uterus has been evolved—this time by Dr. Schmitz. His treatment consists of injection of alcohol into the affected part. Although we do not wish to bias our readers, we may state that we only believe in one

treatment for uterine cancer—total extirpation of the organ; at all events, we should be sorry to recommend this treatment in any but those cases where the disease had spread too extensively for surgical interference.

Dr. Sänger's operation for the repair of lacerated cervix overcomes the objection to Emmet's old operation—namely, narrowing of the cervical canal. It is easy in its accomplishment, and in every respect is as efficient as the American operation.

Dr. W. T. Lusk describes, in the July number of the *New York Journal of Obstetrics and Gynæcology*, a very interesting operation which he performed for ectopic gestation, the fœtus being alive and between the sixth and seventh month. Having cut down on the sac, he ligatured the ovarian arteries, and was thus able to remove the fœtus with its placenta and membranes attached, the hæmorrhage resulting therefrom being easily controlled by pressure on the aorta, and subsequent plugging with iodoform gauze.

Now that curetting has become so universally and rightly employed in the treatment of endometritis—the commonest disease from which women suffer—the experience of many operators had better once more be noted. That this is not always a harmless proceeding, and that it also requires some special skill in its accomplishment, is evident from the many unfavourable cases which from time to time come under our notice. The complications which have occurred with greatest frequency are—1st, hæmorrhage; 2nd, perforation of the diseased and softened uterus; and 3rd, acute sepsis.

ELECTROCUTION.

The *Medical Record* of 5th August comments severely on the execution by electricity of a convict at Auburn (N.Y.) on the 21st July. It is impossible to conceal the fact that the new method proved, in this case, a ghastly failure, although the criminal was ultimately extinguished by electricity.

DOMINION MEDICAL MONTHLY.

We have received the first number of this periodical, published at Toronto. It promises well. One very obvious reform it undertakes to advocate—the establishment of a central licensing board for the Dominion. At present each province has its own qualifying body or bodies, and admits graduates of other provinces to practice only after re-examination.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

Waterborne Cholera.[a] By ERNEST HART, D.C.L. Durh. (*hon. causa*); M.R.C.S. Eng.; Editor of the British Medical Journal; Chairman of the National Health Society.

(*Continued from page 322, and concluded.*)

(F) RUSSIAN EXPERIENCES IN 1892.

The complete history of the cholera epidemic in Russia in 1892 remains still to be written, but what we know of it bears out previous experiences as to the influence of infected water. We venture to take the following extract from some very interesting papers on the subject which have been written by Dr. Frank Clemow,[b] of St. Petersburg. Speaking of the distribution of the epidemic, Dr. Clemow says that "the experience of last year's epidemic has added a large body of evidence to that furnished by earlier outbreaks upon which conclusions may be founded as to the means by which cholera is spread from one district to another. In tracing the disease from its first introduction across the Persian frontier throughout the Russian empire, it has, I think, been clearly shown that cholera followed the main lines of human communication, and that where these lines coincided with a great river, such as the Volga, the spread of the disease was much more rapid than where communication was mainly by railways. These were the conclusions to be drawn from the behaviour of the epidemic as a whole. The object of the present article is to bring together evidence as to its behaviour in individual cases. The evidence has been collected from various sources, but principally from the discussions at the conference on cholera held in St. Petersburg last December, and from the medical and lay press at the time of the epidemic. In almost every instance that has been recorded where the means by which the infection was carried was known the course of events was somewhat as follows:—A person coming from an infected district to one that has

[a] An Address delivered before the Forty-fourth Annual Meeting of the American Medical Association, held at Milwaukee, Wis., June 7, 1893.

[b] Lancet, May, 1893. P. 1,055.

hitherto been free from the disease sickened with cholera soon after his arrival. The earliest subsequent cases in the town or village occurred among members of the household of the first patient, among persons who had been in contact with the first patient or with articles soiled by him, or among persons who had drunk water from sources polluted, directly or indirectly, by the dejecta of the first patient. I may be pardoned for giving in detail the following instructive histories:—In the village of Ulybyshef (Vladimir government) a labourer arrived on June 29 from Kazan, where he had attended the funeral of his brother, who had died from cholera. Three days later he sickened with the disease in the morning and died in the same evening. The clothes he had worn remained in an outbuilding for a week. They were then washed in the stream from which the village drew its water supply. In a very short time cholera became epidemic throughout the village. In the government of Viatka, five villages situated along the banks of the same stream were invaded by cholera. The infection was traced to the systematic washing of linen belonging to the early cases in the stream which provided the inhabitants of all the five villages with their drinking water. No sooner was this practice forbidden than the epidemic began to abate. In the village of Upper Moulla (Penn government) an exactly similar relation of cause and effect was recorded. The linen of cholera patients was washed in a pond. From the same pond the inhabitants drew their supply of drinking water, with the result that cholera raged throughout the village. As in the last instance, as soon as the washing of linen in the pond was put a stop to, the number of cases of cholera in the village began to diminish. In the village of Borki (Samara government), lying on the river Samarka, the first case of cholera was that of a woman. After a short interval a peasant was seized with cholera upon a barque lying at anchor a short distance further down the river. The disease then became epidemic solely among that portion of the population which drew its drinking water from the river. The remaining inhabitants, who drank water obtained from wells, remained free from the disease with but one or two exceptions. In Great Bereznikof, a village in the Simbirsk government, an exactly parallel instance was recorded. Cholera attacked only that part of the village which drew its water supply from the river Kshi, while among the inhabitants of the village whose drinking water was derived from wells there was but a single case—that of a beggar woman to whom had been given some clothes from an infected house. In two villages in the Tambof government, in each of which a dual water supply existed, it was observed in like manner that cholera was confined to one portion of the inhabitants. In each instance it was found that this portion of the inhabitants drew its water supply from a pond contaminated through the washing of linen of cholera patients. The rest of the village, supplied with well water not so contaminated, did not furnish a single

case of cholera. The part played by water in the diffusion of cholera was clearly illustrated at the beginning of the epidemic in St. Petersburg. It was found that the earliest cases were confined to the workmen in the large factories situated on the banks of that branch of the Neva known as the Great Nevka. The workmen were accustomed to drink water derived directly, without filtration or boiling, from this branch of the river—water which at all times is charged with much organic matter (14 parts in 100,000), and which produces gastro-intestinal catarrh in all persons unaccustomed to its use. It was at once arranged that water should be supplied to the workmen from the town waterworks, and that this water should be filtered or boiled before drinking. The effect of the change in the water supply was immediate, and there was no further spread of cholera in that part of the city. Another instructive case was furnished by one of the St. Petersburg prisons. A prisoner who had been in solitary confinement for more than a month was suddenly seized with all the symptoms of cholera. Bacteriological and *post-mortem* evidence confirmed the diagnosis. All the prisoners were supplied with boiled water, and for a time the source of infection remained an enigma, which was only solved by the discovery that the deceased had drunk a quantity of unboiled water, provided to him for washing purposes. Steps were immediately taken to furnish all the other prisoners with boiled water for whatever purpose required."

In an interesting Report by the United States Consul at Tashkent, in Turkestan, dated October 11, 1892, I also find the following interesting statements:—

"That the cholera germs were taken into the system through drinking impure water my experience and personal observation confirm. At Samarcand three regiments of infantry were encamped side by side on a level plain close beside a stream of water. The colonel of one of these regiments took the most extraordinary pains to prevent his men from being attacked with the cholera, and he succeeded. In the first place he caused every article in the camp to be thoroughly cleansed with hot water and disinfected. He compelled his men to bathe every day in water that had been boiled, and a guard was constantly maintained whose duty it was to keep the soldiers from drinking the river water, and to carry out the colonel's instructions. The result was that not a single case of cholera occurred in the regiment, while the other two regiments which were camped alongside lost over 100 men from cholera. In these latter regiments the ordinary precautions were taken, but no such measures were adopted as I have mentioned above.

"At Ashabad the cholera had almost disappeared early in August, and the event was celebrated with much rejoicing on the Emperor's name day, which occurs in that month. The Governor-General gave a dinner, to which he invited a numerous company, and to the various regiments

were granted extra rations that they might rejoice on the occasion. The day which began so auspiciously amidst general rejoicing was destined to have an ending which has no parallel in history. Of the numerous guests who attended that dinner, one-half died within 24 hours. A military band of about 50 men, who played during that fatal dinner, lost 40 of their number with cholera and only 10 of the men reached camp that night. One regiment lost half its men and 9 officers ere the sun rose the following morning, and within 48 hours 1,300 died of cholera. The cause of this outbreak was clearly traced to a small stream of water which supplied the town. Four days previously the authorities were informed that cholera had broken out in a small Turcoman village, situated on the banks of this stream, about 4 miles from Ashabad. The inhabitants of this village were ordered to move their kilrtkas (tents) several miles back on the hills, which they did. On the day previous to the re-appearance of the cholera at Ashabad, a very heavy rain-storm occurred, which washed the banks of the river, and swept refuse and other matter from the abandoned village into the stream, and this matter was carried by the water into the city and distributed to all parts of the town by the numerous open canals through which the inhabitants were supplied with water. It was this contaminated water which caused the re-appearance of the epidemic and the frightful mortality which followed. The population of Ashabad was not more than 13,000, of which 10 per cent. died within 48 hours."

(G) CHOLERA AT HAMBURG IN 1892.

The secrecy and prevarication attempted last year at Hamburg, when cholera appeared in that city, are much to be regretted. Great risk was thereby incurred in other seaports where, had the presence of the disease in Hamburg been known, the exercise of a little extra vigilance, but without the imposition of quarantine, would have probably secured the detection before landing of any suspicious cases from the North German town. Although August 21 was the first day on which the presence of cholera in Hamburg was officially admitted, there is no doubt that cases had occurred there quite a week before that date. The public announcement that on the first day as many as 83 cases and 22 deaths had occurred naturally caused a feeling of much anxiety throughout Europe and America, for in times past Hamburg has been a very frequent distributor of the disease. How the infection was first introduced last year into Hamburg is still a matter of dispute, but there can be little disagreement with the opinion that when once it was started the public water supply was the vehicle of its dissemination.

The strongest and most striking evidence of this is afforded by the relative incidence of the disease on Hamburg, Altona and Wandsbeck, which together make up the Greater Hamburg. Wandsbeck, with a

population of 20,571, had 64 cases (3·1 per mille) and 43 deaths (2·0 per mille); Altona, with 173,279 inhabitants, had 572 cases (3·3), with 329 deaths (2·3); Hamburg State, with a population of 622,530, had 17,974 cases (28·8) and 7,611 deaths (12·2); or, taking only the infected parts, the town and suburbs of Hamburg, among 579,907 inhabitants there were 17,891 cases (30·8) and 7,582 deaths (13). This striking difference between Wandsbeck, Altona and Hamburg is distinctly traceable to the water supply. Thus Wandsbeck, which suffered less than the other two, is supplied with spring water, whereas Altona and Hamburg derive their water from the Elbe. Altona, however, gets its water very far down, at Blankenese, where the river is cleaner than in Hamburg, and passes it through a good gravel filter, unlike Hamburg, which gets its water from the harbour contaminated with sewage and absolutely unfiltered. These facts led Dr. Hueppe,[a] who spent the whole of last September in Hamburg, as well as most other observers, to the inevitable conclusion that the water of the harbour and the waterworks were answerable for the outbreak and rapid spread of the epidemic.

On behalf of the *British Medical Journal*, the history of the water supply of Hamburg has been investigated by a special commissioner on the spot, and its history has been examined from a series of official and other publications.[b]

HISTORY OF THE PRESENT SYSTEM.

According to the official volume, "Hamburg and its Buildings," published by the Hamburg Architects' and Engineers' Association in 1891, the oldest system of water supply, which was established in the fourteenth, sixteenth, and seventeenth centuries, was replaced in 1822 and 1843 by new systems, where steam power was first used. They were only in force in part of the town, but are not entirely out of use in certain districts at the present time.

After the great fire in 1842 W. Lindley undertook the water supply of the entire town, after Mylne's system, then in force in London; by 1849 the new supply was in full working order. In July, 1890, the sand filtration system of the water pumped from the Elbe was established at the central depot of the waterworks at the expense of 7,000,000 marks, and it now supplies districts including a population of nearly 800,000 souls. There are 64 fountains in Hamburg city, 39 being for drinking purposes; but, of course, the ornamental fountains and "market fountains," so familiar in Germany for public laundry work, play out water accessible for persons who may be more thirsty than prudent, and more thrifty than foreseeing. There remains the supply to private and public houses and offices. The Altona waterworks at Blankenese supply a

[a] Berlin. klin. Woch. Nos. 4 and 5, 1893.

[b] British Medical Journal. September 22, 1892, p. 708.

population of 140,000. They were originally built after the plan of Hawksley of London, in 1857, and nearly half of the present buildings remain as he projected them, but improvements were made on a large scale in 1873–75, and 1884–88. Extensive sand filtering beds were then constructed. It was on the recommendation of Herr Henry Gill, Director of the Berlin waterworks, and Augustus Fölsch, that sand filtration was introduced at Hamburg.

THE NEW SYSTEM.

Herr Arnold Samuelson, engineer to the Hamburg works, has published a treatise on the establishment and working of the new system in his city. The later treatises, pamphlets, and articles on this filtration, published this year, are, as might be expected, less congratulatory than those issued at an earlier date Herr Samuelson implies that the results are not satisfactory, while in a work on the lighting, drainage, and water supply of Hamburg, published in 1887, it is stated, at the conclusion of the paragraphs on the drainage and sand filtration, that the Elbe water purified by this system is remarkably good, especially pleasant and wholesome to drink, and at the same time well suited for ablution and laundry work, owing to the small quantity of calcium salts which it contains. The system is doubtless good, the filter beds have been excavated and paved with care. But not only may the water be polluted between the filter beds and the public fountains and private cisterns, as evidently occurs; not only do a large waterside population drink water direct from the Elbe, but there remains the fact, which long descriptions of new designs of filter beds must not make us forget, that a considerable district is yet supplied by a system seventy years old. Evidence is also not wanting that the water fresh from the filter beds is not free from germs; indeed, it appears to be infested with them.

THE ELBE WATER AND SAND FILTRATION.

This turns our attention to another fact—that the supply of water is from the Elbe. It is quite possible to filter away solid bodies, and to precipitate noxious inorganic chemical salts; but organic germs can not be removed by retaining millions of cubic feet of water from one of the great muddy Continental rivers in extensive open filtering beds. A few pints of water are easily purified, perhaps without boiling, in the wards of a hospital, but none would willingly rely on sand filtration alone for purifying water from a river which has run for hundreds of miles through hundreds of towns and villages. At least such filtration would never be trusted had an epidemic once broken out in the neighbourhood of a hospital. When it comes to the purity of the water supplying a great city, the insufficiency of sand filtration of river water is thus rendered self-evident.

Among the rules issued for the public benefit by the Imperial Sanitary Board we find clauses relating not only to ditch water, river water, and water from the basins of town pumps and fountains, but also to "suspicious water" from any source. The citizen is warned not to drink any water that may in his own opinion be suspicious, and he is also reminded that small house filters are untrustworthy, not being perfect purifiers of water which may be impure when put into the filter—the Hamburg water being no doubt borne in mind when this caution was framed—besides being specially dangerous when not kept perfectly clean by frequent changing.

THE PAST OF THE WATER.

Judging from official and medical works on Hamburg, that city has suffered very severely in the fourteen epidemics of cholera which, beginning in 1831, have hitherto visited that city until the last appearance of the disease in 1873. In all these publications the water is blamed; but it is the Elbe water fresh from the river that is meant even when not specified. In all the visitations the waterside poor were first attacked, and this truth, confirmed by statistics, is only what might have been expected. But an elaborate work on Hamburg, its natural history and medical aspect, lays all the blame on unfiltered Elbe water, and those who drink it; and this work appeared in 1876—that is to say, three years after the last epidemic. The explanation therein given as to the way in which the disease spreads to the wealthy, and to parts of Hamburg far from the Elbe and Alster, is clearly a hypothesis on which the authorities have been lulled into a false security.

The epidemic of 1892 shows that something has been overlooked. The first to suffer, says the work above quoted, are the sailors and poor close to the Elbe; then, when a large number of them are dead or ill, the infection is carried from man to man into other parts of the town. Thus direct contagion is made to account entirely for the spread of the disease. There is not a suggestion that the waters from the filters might be incompletely purified, although it is clear from close examination that in 1876, as now, the apparatus for filtration was not adequate, was not placed at the general disposal of the town, and besides did not promise such adequate filtration from organic impurity as its projectors professed it could give.

TRIBUTARY STREAMS AND LOCAL SUPPLIES.

Besides the "water supply" in the official sense of the term, we may consider the total supply of water procurable in any way, whether from Nature direct or from local sources. Dr. Wibel wrote an exhaustive monograph on the river and surface water of Hamburg in 1876. The three rivers in the immediate vicinity of the city are the Elbe, Bille and Alster. The analysis of water taken from the middle of the Elbe showed

that Elbe water was not different in composition from that of any other river similar in it source, length and course. The tourist who has visited the beautiful district near Dresden known as the Saxon Switzerland, is aware that the Elbe, as it flows by Schandau and Pirna, far from the great city near its mouth, is already a very dirty river; and even at Leitmeritz in Bohemia, the narrow rapid "Elbestrom" is as muddy as the Mississippi. Nobody would care to drink it there. At Hamburg it is, of course, much worse. The Bille is a small stream which flows from the woods where once our Saxon ancestors dwelt. Dr. Wibel shows that in the suburbs of Hamburg it is fairly pure. But near its entry into the Elbe within the city, it is thoroughly polluted, and full of all sorts of organic substances. The Alster arises in Holstein, and enters the Elbe after dilating, on account of artificial impediments, into the famous "outer and inner Alster," which are among the "lions" of Hamburg, and give a characteristic appearance to the city. The analytical tables show that the Alster is not nearly so polluted as the other rivers; probably its two great ponds, used for boating and skating, are not so near low quarters, and housewives with pails and dust-bin produce as are the Elbe and Bille. Unfortunately there flows into the outer Alster a stream of notorious ill fame—the Eilbeck—which neutralises much of the advantage that the Alster may gain from the kind of protection above referred to. The Eilbeck flows through the town of Wandsbeck, in Holstein, and before opening into the Alster it spreads out as a pond known as the Kuhmühlenteich. The Eilbeck was tried and found guilty in 1874 of having caused an epidemic of typhoid in a district through which it flows.

CANALISATION AND POLLUTION.—SURFACE WELLS AND PUMPS.—POSSIBILITY OF ARTESIAN WELLS.

Hamburg once had the great advantage of a large number of running streams of pure drinkable water. Hence, no doubt, in past centuries, when the hygiene of the town was otherwise far worse than at present, the citizens escaped dangers to which their living descendants are now exposed. The extensive canalisation of Hamburg has entirely destroyed many of these streams. Only four remain, and three are thoroughly polluted, running through dirty slums; one of them receives the drainage of the main cemetery. The fourth, the "Englischer Brunner," is less noxious. This pollution of bright streams is a sad affair, and their restitution to their pristine purity a theme worthy of the consideration of sanitarians. Dr. Wibel notes that the ease with which water can be obtained from the waterworks supply has caused the good old fashion of drawing water from these streams outside the town to die out. Our surprise about the prevalence of cholera will be much allayed when we find that Dr. Wibel analysed the brook water from certain pumps close to the streams. Out of the pumps much evil must be drawn. The

pumps properly so-called, drawing surface water and not water from the rivers or streams, are next considered. Their water is condemned, and yet some of them are specially used for table purposes. A few surface water ponds with drains exist in the neighbourhood of the city; of course, they are polluted. Lastly, Dr. Wibel describes his researches respecting the artesian wells, of which it appears there are ten at the disposal of the city. The water is fairly pure, but as it flows in different wells through different strata it varies greatly in chemical composition. In some cases it is highly charged with soluble inorganic salts. It is not satisfactory to find that Dr. Wibel does not consider that it is an easy matter to discover fresh artesian wells. There is no known indication for calculating where they can be pierced so as to reach water at a safe depth without great cost and difficulty.

ARTESIAN WELLS AND SAND FILTERS.

The mention of artesian wells in relation to Hamburg renders it necessary that all who take a real interest in the restitution of that city to a sanitary condition should remember precisely what an artesian well is, and how it is made. It is a spring of water, rising above the surface of the ground by natural hydrostatic pressure as the result of boring a small hole down through a series of strata to a water-carrying bed enclosed between two impervious layers. In the first place the difficulty of boing a small hole through a great depth of strata varying in density is considerable, and the expense high. The boring is always more or less experimental; the precise position of subterranean water is not always to be determined. Sometimes the boring need be but about 300 feet, as in many English wells; at others 3,000 or even 4,000 feet are exceeded. Then the boring may strike water lying between two impermeable strata; but there may be a flaw in one of the strata, or the lower may be damaged by boring too far. In both cases the water will not rise, as it escapes through the flaw or sinks below the lower impermeable stratum running through the boring into the porous soil beneath. In boring a well at St. Louis, Mo., in 1868, water was found at the depth of 3,147 feet, but it proved to be brine. Hence, minute precautions must be taken else all the engineer's labour may be in vain. Boring too many wells close together prevents the water from rising to the surface, so that pumps have to be used. To cry out for artesian wells at once is like demanding the instant building and equipment of ironclads when the foe is near the coast. The boring of the wells is a necessary prophylactic duty, which the authorities must deliberately, but not hurriedly undertake. As for shallow wells, digging for them is out of the question, as they are never to be tolerated in a porous soil, as at Hamburg, on which houses are built. The best bricking in of the sides cannot protect them from impurities entering from above and below.

For understanding sand filter beds much knowledge of sanitary engineering is demanded. But in relation to their failure at Hamburg, it is interesting to know how they may fail. In the filter beds the bottom is paved, then layers of clean material are spread, decreasing in coarseness from small rubble to sharp sand, with a total average thickness of about four feet. The actual filtration is effected by the upper layer of sand, and the lower layers allow the passage of the water unaccompanied by the sand. The efficiency of the filtration depends upon the slowness of the passage of the water; sometimes defects may cause the water to flow too fast. The top layer of sand soon becomes choked with the matter removed from the water. Hence the filter must periodically be cleaned by scraping off the top surface of the sand. Thus it is easy to understand that a filter bed may be faulty and is easily mismanaged.

During the months which immediately followed the epidemic of 1892, provision was made for an additional water supply, in case of need, pending the completion of the improvements which are being carried out in connection with the present waterworks. This provisional supply consists of 56 public wells, 34 useful private wells, 43 stations for boiling river water, and 126 connecting taps with the Altona and Wandsbeck systems. There are also 98 water carts for the distribution of this water, and 6 water boats to supply the shipping interests. A few of these wells were in use before the epidemic broke out, but most of them have been opened since that time. During the past few months at least 127 wells have been bored at the public expense, but only 39 of them have been found to furnish a useful water. More wells are being sunk. The popularity of the stations for boiling river water may be judged from the fact that several of the stations are visited by upwards of 1,400 people a day. The improvements which are nearing completion at the waterworks consist of 4 large subsiding basins and 18 filtering beds, on the principle of downward filtration through fine sand. The water will be taken from a point 2·4 kilometres further up stream than at present. The subsiding basins will have a capacity of 78,500 cubic metres each, and the water will be allowed to settle twenty-one hours before it is drawn off into the filtering beds. The filters are 18 large rectangular open basins, built of brick and cement on a clay base; each basin has a surface of 7,500 square metres, and a capacity furnishing 11,250 cubic metres of water per day, at a filtering rapidity of 62·5 millimetres per hour. The filter consists of a layer of sand 1 metre in thickness, spread over a layer of gravel and stone, which is 0·6 metres in thickness.

WATERBORNE CHOLERA IN INDIA.

India is very generally referred to as the "home of cholera." The disease is there established endemically throughout a wide area, but not, as most Indian authorities once believed, and many would even now

apparently often have us believe, in virtue of any local, mysterious, unknown, or unpreventable causes. It is so in virtue of conditions which may all of them be removed, and which in time I trust will be removed. In 1879 there were 318,000 deaths from cholera in India; in 1881 there were 161,000 deaths; in 1887, 488,000; and in 1888, 270,000. It must also be admitted that nearly all the great cholera epidemics can readily be traced back to India along lines of human intercourse. But what to my mind is entirely contrary to all we know of cholera, and is, from a practical common sense point of view, much to be deprecated, is the tendency in many quarters to regard the idea of eradicating cholera from India as impossible and ridiculous. I have waded through and studied, I think, all the reports and available information respecting India during the last thirty years, and have had the benefit of much personal converse on the subject with medical men who have spent years of their life in the "endemic area" of India, and in the result it seems to me as fatuous to deny the possibility of ridding that "endemic area" of cholera, as to deny the possibility of banishing typhoid fever from unwholesome localities in this country. I do not question the herculean nature of the task. The religious rites and superstitions prevailing in India, the ignorance and fanaticism of the natives, the enormous expenditure requisite, may all combine to render the difficulties of the task well nigh insurmountable in present circumstances. But let it be rationally realised that an endemic area of cholera in India is a removeable blot, and let those who are responsible for the government of India set to work to remove the food on which cholera grows, and in time to starve the scourge out of India. For my own part I am convinced that in India, as elsewhere, water has been the chief nurse and disseminator of cholera, and that if every town and village in India were provided with pure and properly-protected water the so-called endemic area would soon become indefinite, and would eventually disappear from the map. Why there should have been so much opposition to this contention, such needless straining to prove it groundless, or to shake its foundation, I am somewhat at a loss to understand. It is a fact that cholera, to all intents and purposes, fled from Madras and numerous other places immediately on the introduction of uncontaminated and properly protected water. Why should not the experiment which, when tried, has always been found successful, have been extended, or, at least, further tested in new localities? Happily, with the support of such eminent and practical Indian sanitarians as Drs. Macnamara, Townsend, De Renzy, Cornish, Payne, Simpson, Furnell, and Laurie, the contention that water is a frequent and common means of cholera diffusion in India is gaining ground, and must ere long bear good fruit.

Dr. M. C. Furnell, in his recent excellent book on the subject, expresses himself as firmly of opinion that the general method of the

propagation of cholera in India is by means of specifically polluted water. While in Europe, however, nearly every outbreak of cholera has been definitely traced to the contamination of the water supply, and much has been written about it, telluric and atmospheric conditions are distantly invoked by Indian authorities. These are terms of mystery and of indefinite meaning, which, unfortunately, have been adopted, however, by too many government officials, who cannot explain what they mean, and frequently use them as a cloak for ignorance. Dr. Furnell has had no difficulty in finding masses of facts in support of his opinions. The habits of the natives, though in direct opposition to their own laws and sacred writings, are such as tend to the most filthy pollution of the water supplied for their use. Where pure water has been supplied to the natives, as in Madras and Calcutta, and care has been taken to guard such sources of supply from pollution, cholera epidemics have become of infrequent occurrence and of greatly reduced fatality. In this opinion all the best authorities concur.

I will refer to the two great cities which are leading seats of government, and most under our influence. In the paper by Dr. W. J. Simpson, Medical Officer of Health, read at the British Medical Association, in August, 1888, he gave a description of Calcutta, Howrah, and the suburbs, dwelling especially on the water supply, the tanks, the drainage, the construction of the streets and houses, native and European; and the sanitary system generally. Calcutta, to the south of the native town, he stated is well built; the streets are wide and straight; the houses are large and have gardens attached; there is a liberal supply of excellent water, the drainage and cleansing are good, and that portion of the city compares favourably with the better parts of London. With a few exceptions, northern and native Calcutta is densely crowded, the streets are narrow and irregular, the drainage is bad, only the better and middle class have a fair supply of water; the poorer class have a very scanty water supply, and depend upon the water in the tanks. The native town is studded with wells and tanks. Neither Howrah, with its 100,000 inhabitants, nor the suburbs of Calcutta, with its 250,000, have any public water supply, with the exception of the wells and tanks. The insanitary condition of Howrah, without a public water supply, and without building regulations, is surpassed by the suburbs, which have no public water supply, no drainage, no building regulations, nor any effective conservancy arrangements. As a general rule, European residents in Howrah get their water from Calcutta by carriers, and they avoid the well and tank water. The personal habits of the natives are cleanly. As a religious duty they bathe at least once a day, the women more frequently, and this is done when convenient in the river Hooghly, but generally in the tanks near their houses or huts. The tanks are thus defiled by the excretions of the body, by the washing of dirty

clothes, frequently of clothes soiled by excretions of the sick, by human ordure due to the practice of children and others defecating on the banks of the tanks, and by the drainage and soakage from the surrounding huts and houses. Thus the water in the tanks, except during the rainy season, varies in quality from moderately polluted up to concentrated sewage, and this is the only water supply practically available for large numbers of the native population. Dr. Simpson traces out the connection between local outbreaks of cholera and a deficient and contaminated water supply, showing that those who have an abundant and pure water supply—namely, the European and better class of natives—escape cholera epidemics, except in isolated instances, which can generally be accounted for; while the natives who necessarily depend on the tank water, suffer severely when the tank becomes polluted by the excreta from a cholera patient. He says:

"I would particularly direct attention to this scarcity of water in the parts affected. Go almost where one may, in the northern part of the town, and especially in the riparian wards, there is the same complaint of the want of water, and a very valid one it is. It is a common occurrence to see the people grouped round one of the standposts, waiting their turn to fill their chatties, many of them to be disappointed, for the water from the standposts often comes in mere driblets, and the supply is exhausted or turned off before half the people are supplied. Scarcity of water brings in its train a great deal of sickness apart from cholera. The districts which have suffered most from scarcity of water have suffered also from a large amount of sickness of a dysenteric character."

The natives bathe, wash their utensils and clothes in the tanks, because it is the only available place for doing so; and they use the water of the tanks, contaminated in addition by soakage and sewage, for cooking and drinking, because it is the only available water supply for domestic purposes. The remedies for the condition of affairs described are simple enough, but they need time, and must involve considerable expense. The first requisite is a liberal water supply for Howrah and the suburbs, and a more liberal supply for Calcutta. Few will drink polluted water if they can obtain pure water. By specially constructed tanks, even the habits of the people can be so directed as to permit them to enjoy the luxury of the bath, and to perform their ablutions without danger. The second requisite is well-planned streets with free ventilation, good building arrangements, a system of drainage to pass through these streets, systematic clearing, levelling, paving and filling up ponds, draining, scavenging, removal of nuisance, and a well-organised sanitary department. The carrying out of these measures will ultimately convert Calcutta, Howrah and the suburbs, containing nearly 800,000 inhabitants, into as healthy a locality as any in the world, in so far as the prevalence of diseases not due directly to a sub-tropical climate is concerned,

and these measures of sanitation will change one of the most important centres in the endemic area of cholera into an area no longer marked by endemicity. Before any real progress in scientific medicine can be expected in India, the scientific branch of the medical service must be distinct from the administration, for when administrative functions preponderate, scientific research is relegated to such a subordinate position as to render it impossible to be carried out satisfactorily. A central institute is necessary, well-equipped, and having attached to it a body of men well trained in chemical, physiological, and biological methods, whose whole time should be devoted to scientific research.

I take another example from Dr. Furnell, the Surgeon-General, at Madras, writing, in 1886, an address on cholera. For many years before the introduction of the Red Hills water supply into Madras, the number of deaths from cholera annually amounted to hundreds, and too frequently to thousands; but from the year 1872, when the water supply was first opened, there has been a very large reduction in the mortality, one year being absolutely free from the disease, and in three others the deaths being 5, 6 and 2 respectively. Of course during the famine years there was a large increase in the fatal cases of cholera, caused by the migration into the town of many poor, half-starved creatures who had no strength left to resist the disease. But as soon as the famine was over the rate of mortality again fell to below 100 per annum; and during the last four years when there has been a severe epidemic of the disease throughout the greater part of the Madras presidency, the average number of deaths had not exceeded 250 per annum. The greater part of these deaths also, it is shown, took place in those parts of the town which had not had the benefit of the Red Hills water supply. Dr. Furnell, therefore, urges the necessity of extending the water supply to these localities. Our duty, then, lies before us; it is a grave and difficult task, but must be looked steadily in the face.

From Dr. Furnell, also, I gather that Pondicherry has a similar immunity from cholera, even while the disease is raging in the neighbouring English towns of Cuddalore, Chellumbrum, &c. Pondicherry town is supplied with water by artesian wells and also from a small lake situated some distance outside the town, from whence the water is led by pipes and distributed throughout the town. It is impossible to contaminate the source of the artesian wells, and great care is taken that the other source is also protected. To this unique water supply Dr. Furnell has attributed the immunity of Pondicherry from cholera. "If it is argued," he says, "that it is more likely owing to its general cleanliness and conservancy, I answer that while all must admit Pondicherry is a clean town (in that respect an example), still I cannot admit that it is so much cleaner than the neighbouring town of Cuddalore, where cholera flourished with much vigour; nor can I admit the difference is

owing to telluric, atmospheric, or local influences, for, to tell the truth, these terms convey no very definite ideas to my mind, and seem rather a convenient escape from ignorance than from any scientific explanation. For why, one may ask, should a certain spot in a contaminated district thus suddenly be exempt from these mysterious influences? Its unique water supply, free from contamination, seems to me a much more common sense explanation of the matter."

Here is another instance quoted by Dr. Furnell of the protection afforded to a community by a pure and uncontaminated water supply. It is Dr. Van Geyzel, of Ganjam, who thus describes it: "The port of Gopaulpore (Ganjam district) has enjoyed a remarkable immunity from epidemic cholera under circumstances which are sometimes considered very favourable to the spread of the disease. Cholera has this year (1885) raged all over the district, from Rumbha to Chicacole, and from east to west; the villages in the neighbourhood of Gopaulpore furnished not a small proportion of cases. When it is remembered that from these very villages hundreds of coolies go daily to Gopaulpore for work, and back again; that a stream of carts, about 150 on an average, keeps daily pouring into Gopaulpore from various parts of the district and out again, it goes without saying that Gopaulpore is by no means isolated in any way, but on the contrary, it has as frequent and large a communication with the interior parts of the district as Aska or Rumbha, or even Berhampore, in all of which places it may be said that cholera is very seldom absent. During this year only three cases of cholera occurred in Gopaulpore. These cases arrived already suffering from the disease. In this way the disease has occurred, now and again, chiefly among people coming from other places, but it has not gained a foothold. The general sanitary condition of Gopaulpore, though much improved of late, is by no means what is to be desired. There is, however, one circumstance which makes Gopaulpore unique in respect of its water supply; it has absolutely no tanks whatever. There are thirty-five wells in the village for a population of 2,675 people, good, bad, and indifferent. Lately some wells have been sunk by Mr. Minchin, who generously allows people to take drinking water from them, and they are freely resorted to. The immunity of Gopaulpore from epidemics of cholera while it was surrounded by infected villages with which abundant daily communication took place, as well as with other and more remote parts of the district, especially at a time when cholera was raging epidemically generally over the whole district, and the inability of the disease to establish itself, although it was imported on many occasions, point to the want of something by which the disease could be propagated and spread. In this connection the absolute absence of tanks is well worthy of note.

A further example of the influence of the water supply upon cholera

in India is furnished by the 85,000 inhabitants of the city of Nagpur, the capital or chief city of the central provinces. In 1872 that city was supplied from the "Ambaghiri reservoir." In the seven years previous to the opening of this water supply there were 1,264 deaths from cholera, while in the next seven years after that date Nagpur had only 177 deaths from that disease. It has been further remarked in Nagpur that after the opening of the water supply the cholera was limited almost exclusively to that part of the city in which impure water was still used, such as that of surface streams and open tanks.

The following interesting account of a cholera epidemic in the Salem district in 1881 is extracted from the annual report of the sanitary commissioner of Madras for that year. It appears that by far the greater number of deaths occurred among people using the river water, which is described as defiled by the filth from drains, the filth from dirty clothes, and the filth from men's bodies. It appears also that more than five-sevenths of the whole number attacked occurred among caste Hindus, people who obstinately cling to the use of this river water from religious belief. The Mussulman population almost escaped; the European and East Indian entirely; and strangest of all, the inhabitants of Kitchipoliem, Chucklers, low caste people who are engaged in most filthy occupations, and who are not allowed to use the river water, also enjoyed an immunity from this dread scourge. The course of the disease is shown to have been mainly along the banks of the river, and the village of Kitchipoliem, mentioned as having enjoyed an immunity from the disease, is situated well away from the river. That the use of the river water alone is not to be justly saddled as the cause of the disease, is evidenced by the statement that the division of the town in which the inhabitants used well water instead of that of the river suffered as severely from cholera as most of the other parts of the town along the river banks. Apart from all this it is added: "The curious feature of the epidemic is its weighty incidence on children, nearly one-half of those attacked being children under 15 years of age, and fully one-half of the deaths occurring among them."

Again, in the Punjab sanitary report for 1869 Surgeon-Major A. C. De Renzy called attention to the remarkable fact that the Fort of Peshawar had almost passed unscathed from the terrible epidemics which had visited that station, and that this immunity was the more remarkable because the fort was extremely unhealthy. Dr. De Renzy attributed the circumstance to the fact that the fort was supplied with water from a well which, though an extremely bad one, was more safe from choleraic contamination than the roadside gutter water so generally used in the cantonment. On visiting Peshawar in company with Dr. Cunningham a few years later Dr. De Renzy was surprised to find that the European troops in the fort had suffered with special severity, and

for a time he doubted the correctness of his own explanation. But casually and after some days the novelty of an epidemic in the fort became less inexplicable. It appeared that about a week before the appearance of cholera at Peshawar the medical officer of the fort seeing how bad was the fort water and how much the troops were suffering from fever, and not knowing anything of what Dr. De Renzy had written about the immunity of the fort from cholera, had recommended the supply of cantonment water, and this water was accordingly sent in casks, the distance being about two miles. The water was supposed to be taken, as ordered, from a certain good well, but it seems that in one case at least, the water carriers, to save themselves the trouble of lifting water by means of ropes and pulley blocks from a depth of 90 feet, had filled their vessels from the roadside gutters. Whether they did so or not in the case under consideration is unknown, but the fact remains that in 1872 for the first time in the history of the fort, the European troops were supplied with cantonment water, and that this was also the first occasion of their being affected with cholera. The native portion of the garrison continued to use the well water as formerly and enjoyed their former immunity from the disease.

Religious pilgrimages are a fruitful means of spreading cholera in the east. In 1866, 30,000 pilgrims died of cholera at Mecca. And here let me mention one of the customs of that pilgrimage which goes far to explain the intensity and the fearful mortality which attend any outbreak of cholera among the Meccan pilgrims. At a given period the pilgrims stand naked in turn by the holy well; a bucket of water is poured over each man; he drinks what he can of it, and the rest falls back into the well. The water of this well has been analysed by an English chemist, Dr. Frankland; it is fearfully polluted with abominable contaminations. In 1866, within a few days of the ceremony, the road for twelve miles to the foot of Mount Ararat was thickly strewn with dead bodies.

In a report in June, 1891, Dr. W. J. Simpson, an able and energetic health officer of Calcutta, gave an interesting account of two large pilgrimages which he personally witnessed in that year—one in the endemic area of Bengal and the other in the non-endemic area or north part of India. The first of these pilgrimages was the Ardhodoya Jog, which is held at Calcutta and other sacred places near Calcutta, at rare intervals of 27 or 28 years. The purity to be obtained by bathing in the Ganges during this festival is exceptionally great, and therefore the gathering of pilgrims at the several bathing shrines was, on its own merits, a very large one. Kalighat, where the gathering in question took place, is in the suburban area of Calcutta, on Tolly's Nulla, a small tidal creek which is held to be more sacred than the Hooghly. The Nulla can be waded across at low tide, but it is the receptacle of unspeakable filth of

all kinds. After describing the insanitary arrangements of the neighbourhood, Dr. Simpson remarks that "without a good water supply, or drainage, or proper means of disposal of the excreta and sulliage, with crowding together of huts and houses irregularly placed, and with the filthy tidal Nulla, which is practically the sewer of the district, and with numerous polluted tanks, Kalighat, it may be surmised, is at no time a healthy spot, and at all times a danger to pilgrims." On the occasion in question at least 150,000 people came into Calcutta in the first and second week of February, and to describe the crowding which occurred in the Nulla on the festival day is difficult. Dr. Simpson performs this task very graphically by appending to his report a photograph which he himself took on the morning of February 8. The crush is seen to be very great, and it is marvellous that no accidents happened; the tide is low, and the bathers, even in mid-stream, have not the water much above their knees. A collection of boats, extending as far as one can see, is so great and close together that only occasional glimpses of the water are to be obtained, and these boats are crowded with men, women, and children. Dr. Simpson gives details of an outbreak of cholera which occurred among these people, as many as 51 cases appearing on February 11. The pilgrims had to be soon dispersed, and though this dispersal checked a larger outbreak at Kalighat which would have only widened its circle afterwards, it could not prevent those already infected from suffering on their way home. Consequently, at some of the principal railway stations sick people had to be taken out of the trains; passengers by boat died on their voyage, their bodies being thrown overboard; while travellers on foot were picked up dying and dead on the roads.

Dr. Simpson's description of the great Kumb festival, which occurs once in twelve years at Hurdwar, is also very graphic, and photographs taken by Dr. Simpson at the festival of 1891—copies of which I have before me—show the sacred pools and the approaches to them to be hidden by a mass of semi-naked human beings. The pollutions to which the sacred pool is exposed on these occasions are indescribable. There is not only the washing of the naked fakirs who cover themselves with wood-ashes as their only clothing, and the general bathing of the pilgrims, who are not all in the cleanest of clothes—several, moreover, on the occasion in question being seen bathing with skin diseases upon them—but the ashes of deceased relatives, enclosed in little red bags, are brought from the different homes of the pilgrims and thrown into the pool. Can it be wondered at that, when cholera cases have been among the pilgrims, disease and death should have spread broadcast?

Reverting again to the sanitary administration of India, and the difficulties to be encountered, I fully recognise that much has been done in the way of sanitary reform under English rule. This was shown by Surgeon-

General Sir W. Moore, in an interesting paper read by him before the International Congress of Hygiene, which met in London in 1891; but at the same congress the authors of numerous other papers showed the amount of sanitary work still urgently waiting to be done in India. One and all of those authors placed the need for better water as the most pressing want throughout India, especially in the villages, which contain 95 per cent of the people of India.

Greater energy and more systematic administration are much needed in regard to the sanitation of India, and England's imperial responsibilities in this matter are very heavy, not only to the native races under her protection, but to civilisation at large. At the International Hygienic Congress in Vienna, the remark was constantly made, "You English have, by your sanitary improvements, prevented cholera from gaining a foothold in England. Why do you not attack it in its birthplace, and prevent it from springing into life in India?" And the same question has more recently been asked by Dr. Talafuss, of Tiflis, and by M. Monod, the Director of the Public Health Department of the French Ministry of the Interior, in his work on Cholera in Finistère. We may well closely question ourselves why we have not succeeded in carrying further than we have done the great work of improving the sanitary circumstances of Indian populations. It has not been, as Sir Douglas Galton has pointed out, for want of knowledge. The following scheme for a new public health service for India has been drawn up by an eminent medical officer in India, who has himself long been engaged in sanitary work and organisation. I commend it as a useful suggestion to our Indian Government.

1. An Imperial Sanitary Department attached to the Government of India.

2. A Provincial Sanitary Department attached to each of the provincial Governments, such as Bengal, N. W. Provinces, Punjâb, Madras, Bombay, Central Provinces, &c.

3. A Local Sanitary Department attached to each municipality, district board, &c.

1. The Imperial Sanitary Department should be administrative and scientific, and quite distinct from the sanitary department of the army. It should consist of—1. The Sanitary Commissioner with the Government of India 2. Deputy Sanitary Commissioner. 3. A Medical Statist. 4. Veterinary Commissioner. 5. Sanitary Engineer. 6. A Minister of Health, having a seat in the Viceroy's Council as President. Scientific agents—Laboratory with trained experts. Duties—The advising of the Viceroy and Council on important health matters, either initiated by the Imperial Sanitary Department or referred to it by the Local Governments; the collection and publication of information as to epidemic disease existing in India and in other countries; the right of asking from Provincial Governments what they propose to do or have

done in checking or inquiring into diseases affecting man, animals or agriculture in their provinces; the arranging that adminstration reports shall be drawn up on a uniform plan for ready reference; the acquiring of all information regarding the movements of pilgrims, coolies and emigrants; the advising the Provincial Government, and requiring the latter to take proper precautions; the consideration of new sanitary laws, &c.

2. Provincial Departments to consist of the following sanitary officers, appointed by the Local Government:—1. Sanitary Commissioner. 2. Assistant Sanitary Commissioner. 3. Sanitary Engineers. 4. A President, who should be a high officer in the Civil Service. Travelling agents—Deputy Sanitary Commissioners or Inspectors, Veterinary Surgeons, Deputy Sanitary Engineers, as may be required. Scientific agents—Trained Professors and Assistants in Government laboratory for bacteriological, chemical, agricultural work, &c., and general sanitary investigations requiring to be done in laboratory. Duties—To control local authorities; to institute special investigations at any particular spot on any particular subject; to make by-laws and amend sanitary laws; to investigate diseases of men and animals, and study agricultural pests, &c.; to analyse waters, &c.

3. Local Sanitary Departments, to consist of Municipal Commissioners or District Magistrates, with Civil Surgeon when obtainable. Executive agents—A Health Officer, attached for one or more towns; an Engineer in similar position, and a Sanitary Staff for each place as required. Duties—Conservancy, water supply, building regulations, drainage, registration of births and deaths, vaccination, stamping out of infectious disease and informing provincial authority by weekly reports as to prevalence of cholera, smallpox or other dangerous disease.

THE FOUR-YEAR COURSE IN AMERICA.

IN consequence of the increasing number of qualifying bodies in the United States and Canada which reqnire a four-year course of medical study, the Iowa State Board of Medical Examiners has adopted the following resolution:—"That after July 4, 1898, no medical college shall be recognised by this Board as 'of good standing' within the meaning of Section 1, Chapter 104, Laws 1886, that does not require as a condition of graduation four graded courses of medical lectures of not less than six months each—no two of which said courses shall be within the same calendar year. That graduation from any college of Dentistry, and Veterinary Medicine, or of Pharmacy, upon a satisfactory examination in anatomy, recognised by this Board as of good standing, may be accepted as the equivalent of the first year's course of medical lectures by colleges requiring as a condition of graduation the graded courses above specified."

SANITARY AND METEOROLOGICAL NOTES.

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Vital Statistics

For four Weeks ending Saturday, October 7, 1893.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Sept. 16	Sept. 23	Sept. 30	Oct. 7		Sept. 16	Sept. 23	Sept. 30	Oct. 7
Armagh -	7·0	28·0	21·0	14·0	Limerick -	19·6	22·5	30·9	30·9
Belfast -	22·6	25·6	23·2	21·4	Lisburn -	8·5	21·3	38·3	21·3
Cork -	20·1	22·8	18·0	11·8	Londonderry	14·1	22·0	17·3	12·6
Drogheda	22·0	22·0	35·1	8·8	Lurgan -	13·7	22·8	9·1	18·2
Dublin -	27·9	23·9	21·9	22·1	Newry -	8·1	16·1	20·1	8·1
Dundalk -	8·4	33·5	12·6	16·8	Sligo -	35·5	15·2	30·5	25·4
Galway -	15·1	3·8	49·1	11·3	Waterford -	25·0	30·0	30·0	20·0
Kilkenny	28·3	28·3	4·7	33·0	Wexford -	13·5	18·1	22·6	36·1

In the week ending Saturday, September 16, 1893, the mortality in thirty-three large English towns, including London (in which the rate was 17·5), was equal to an average annual death-rate of 19·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·7 per 1,000. In Glasgow the rate was 18·3, and in Edinburgh it was 17·3.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 23·2 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 4·9 per 1,000, the rates varying from 0·0 in Newry, Dundalk, Drogheda, Wexford, Lurgan, and Armagh to 6·3 in Londonderry—the 9 deaths from all causes registered in the last-named district comprising 1 from measles and 3 from diarrhœa. Among the 115 deaths from all causes registered in Belfast were 2 from measles, 3 from

whooping-cough, 1 from enteric fever, and 22 from diarrhœa. The 14 deaths in Limerick comprise 2 from measles, and the 10 deaths in Waterford comprise 2 from enteric fever.

In the Dublin Registration District the registered births amounted to 197—92 boys and 105 girls; and the registered deaths to 190—90 males and 100 females.

The deaths, which are 23 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·3 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 27·9 per 1,000. During the first thirty-seven weeks of the current year the death-rate averaged 27·0, and was 1·0 below the mean rate in the corresponding period of the ten years 1883–1892.

Forty-eight deaths from zymotic diseases were registered, being 13 above the average for the corresponding week of the last ten years, and 8 over the number for the week ended September 9. They comprise 1 from measles, 2 from whooping-cough, 1 from ill-defined fever, 13 from enteric fever, 1 from cholerine, 25 from diarrhœa (being 6 over the number from that cause in the preceding week, but 11 under the number for the week ended September 2), and 2 from erysipelas. Twenty-two of the 25 deaths from diarrhœa were of children under 5 years of age, 18 being of infants under 1 year old.

The number of cases of enteric fever admitted to hospital was 55, being a decline of 3 as compared with the admissions for the preceding week: 21 enteric fever patients were discharged, 7 died, and 192 remained under treatment on Saturday, being 27 over the number in hospital on Saturday, Septemher 9.

Eight cases of scarlatina were admitted to hospital, being 2 over the admissions for the preceding week, and equal to the number admitted in the week ended September 2. Six patients were discharged, and 55 remained under treatment on Saturday, being 2 over the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 5 cases of measles (being a decline of 7 as compared with the number for the preceding week) and 1 of typhus: 20 cases of measles and 1 of typhus remained under treatment in hospital on Saturday.

There were but 12 deaths from diseases of the respiratory system registered, being 7 under the average for the corresponding week of the last ten years, and 1 under the low number for the week ended September 9. The 12 deaths comprise 6 from bronchitis and 3 from pneumonia or inflammation of the lungs.

In the week ending Saturday, September 23, the mortality in thirty-

three large English towns, including London (in which the rate was 18·9), was equal to an average annual death-rate of 19·7 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·3 per 1,000. In Glasgow the rate was 17·8, and in Edinburgh it was 17·7.

The average annual death-rate in the sixteen principal town districts of Ireland was 23·8 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 4·8 per 1,000, the rates varying from 0·0 in Galway, Lisburn, Drogheda, Lurgan, Kilkenny, and Armagh, to 7·1 in Belfast—the 130 deaths from all causes registered in the last-named district comprising 1 from scarlatina, 6 from whooping-cough, 7 from enteric fever, and 22 from diarrhœa. The 33 deaths registered in Cork comprise 1 from whooping-cough and 5 from diarrhœa. Among the 16 deaths in Limerick are 3 from measles and 2 from diarrhœa, and the 14 deaths in Londonderry comprise 2 from diphtheria.

In the Dublin Registration District the registered births amounted to 204—109 boys and 95 girls; and the registered deaths to 161—84 males and 77 females.

The deaths, which are 2 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·0 in every 1,000 of the population. Omitting the death of 1 person admitted to hospital from without the district, the rate was 23·9 per 1,000. During the first thirty-eight weeks of the current year the death-rate averaged 27·0, and was 0·9 under the mean rate in the corresponding period of the ten years 1883-1892.

The number of deaths from zymotic diseases registered was 40, being 7 over the average for the corresponding week of the last ten years, but 8 under the number for the week ended September 16. The 40 deaths comprise 1 from scarlet fever (scarlatina), 1 from influenza, 2 from whooping-cough, 1 from diphtheria, 8 from enteric fever, 2 from choleraic diarrhœa, 15 from diarrhœa (being 10 under the number from that cause in the preceding week), 2 from dysentery, and 2 from erysipelas.

The number of cases of enteric fever admitted to hospital was 43, being 12 under the admissions for the preceding week, and 15 under the number for the week ended September 9. Twenty-two enteric fever patients were discharged, 5 died, and 208 remained under treatment on Saturday, being 16 over the number in hospital at the close of the preceding week.

Only 2 cases of scarlatina were admitted to hospital, against 8 admissions in the preceding week: 11 patients were discharged, and 46 remained under treatment on Saturday, being 9 under the number in hospital on Saturday, September 16.

Nine cases of measles were admitted to hospital, being 4 in excess of the admissions for the preceding week, but 3 under the number for the

week ended September 9. Eighteen cases of the disease remained under treatment in hospital on Saturday.

Fifteen deaths from diseases of the respiratory system were registered, being 3 over the low number for the preceding week, but 3 under the average for the 38th week of the last ten years. They comprise 8 from bronchitis and 6 from pneumonia or inflammation of the lungs.

In the week ending Saturday, September 30, the mortality in thirty-three large English towns, including London (in which the rate was 20·1), was equal to an average annual death-rate of 20·2 per 1,000 persons living. The average rate for eight principal towns of Scotland was 19·6 per 1,000. In Glasgow the rate was 20·3, and in Edinburgh it was 21·0.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 22·7 per 1,000 of the population, based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·9 per 1,000, the rates varying from 0·0 in Londonderry, Galway, Dundalk, Drogheda, Wexford, Lurgan, and Armagh, to 12·8 in Lisburn—the 9 deaths from all causes registered in the last-named district comprising 3 from diarrhœa. Among the 118 deaths from all causes registered in Belfast are 2 from measles, 1 from scarlatina, 1 from typhus, 4 from whooping-cough, 1 from diphtheria, 4 from enteric fever, 1 from English cholera, and 12 from diarrhœa. Among the 26 deaths in Cork are 3 from diarrhœa. The 22 deaths in Limerick comprise 3 from measles, 2 from typhus, and 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 213—101 boys and 112 girls; and the registered deaths to 156—91 males and 65 females.

The deaths, which are 15 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 23·3 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 21·9 per 1,000. During the first thirty-nine weeks of the current year the death-rate averaged 26·9, and was 0·9 under the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 29, being 11 under the number for the preceding week, and 2 below the average for the thirty-ninth week of the last ten years. The 29 deaths comprise 1 from measles, 1 from influenza, 1 from whooping-cough, 6 from enteric fever, 1 from choleraic diarrhœa, 16 (including 14 deaths of children under 5 years of age) from diarrhœa, and 1 from erysipelas.

The number of cases of enteric fever admitted to hospital, which had fallen from 58, for the week ended September 9, to 55 for the following week, and to 43 for the week ended September 23, further declined to 38.

Thirty-one enteric fever patients were discharged, 1 died, and 214 remained under treatment on Saturday, being 6 over the number in hospital at the close of the preceding week.

Thirteen cases of scarlatina were admitted to hospital, against 2 admissions in the preceding week, and 8 in the week ended September 16. One patient was discharged and 58 remained under treatment on Saturday, being 12 over the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, fifteen cases of measles (against 9 admissions for the preceding week). Twenty-five cases of the disease remained under treatment in hospital on Saturday.

Eighteen deaths from diseases of the respiratory system were registered, being 3 over the number for the preceding week, but 2 under the average for the 39th week of the last ten years. They comprise 10 from bronchitis and 6 from pneumonia or inflammation of the lungs.

In the week ending Saturday, October 7, the mortality in thirty-three large English towns, including London (in which the rate was 17·9), was equal to an average annual death-rate of 18·5 per 1,000 persons living. The average rate for eight principal towns of Scotland was 19·5 per 1,000. In Glasgow the rate was 19·6, and in Edinburgh it was 17·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 20·6 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 3·7 per 1,000, the rates varying from 0·0 in nine of the districts to 9·8 in Limerick—the 22 deaths from all causes registered in that district comprising 6 from measles and 1 from enteric fever. Among the 109 deaths from all causes registered in Belfast are 2 from measles, 8 from whooping-cough, 2 from enteric fever, and 11 from diarrhœa. The 8 deaths in Londonderry comprise 1 from enteric fever and 1 from diarrhœa. The 7 deaths in Kilkenny comprise 1 from measles and 1 from simple-continued fever.

In the Dublin Registration District the registered births amounted to 181—91 boys and 90 girls; and the registered deaths to 156—79 males and 77 females.

The deaths, which are 1 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 23·3 in every 1,000 of the population. Omitting the deaths (numbering 8) of persons admitted into public institutions from localities outside the district, the rate was 22·1 per 1,000. During the first forty weeks of the current year the death-rate averaged 26·8, and was 0·9 under the mean rate in the corresponding period of the ten years 1883–1892.

Thirty-six deaths from zymotic diseases were registered, being 7 over

the number for the preceding week, and 8 above the average for the fortieth week of the last ten years. They comprise 1 from measles, 1 from influenza, 6 from whooping-cough, 7 from enteric fever, 1 from infantile cholera, 13 (including 11 deaths of children under 5 years of age) from diarrhœa, and 2 from erysipelas.

The number of cases of enteric fever admitted to hospital, which had fallen from 55 for the week ended September 16 to 43 for the following week, and to 38 for the week ended September 30, further declined to 27. Twenty-seven enteric fever patients were discharged, 4 died, and 210 remained under treatment on Saturday, being 4 under the number in hospital at the close of the preceding week.

Only 4 cases of scarlatina were admitted to hospital, against 13 admissions in the preceding week: 13 scarlatina patients were discharged, and 49 remained under treatment on Saturday, being 9 below the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 10 cases of measles, being 5 under the number for the preceding week: 24 cases of the disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 16, being 2 under the number for the preceding week, and 5 below the average for the fortieth week of the last ten years. The 16 deaths comprise 8 from bronchitis and 6 from pneumonia or inflammation of the lungs.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of September, 1893.

Mean Height of Barometer, - - -	29·848 inches.
Maximal Height of Barometer (on 12th, at 9 a.m.), -	30·345 ,,
Minimal Height of Barometer (on 29th, at 9 a.m.), -	29·052 ,,
Mean Dry-bulb Temperature, - - -	54·8°.
Mean Wet-bulb Temperature, - - -	51·8°.
Mean Dew-point Temperature, - - -	48·9°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·350 inch.
Mean Humidity, - - - - -	81·3 per cent.
Highest Temperature in Shade (on 5th), - -	72·0°.
Lowest Temperature in Shade (on 21st), - -	38·2°.
Lowest Temperature on Grass (Radiation) (on 24th)	31·7°.
Mean Amount of Cloud, - - - -	47·4 per cent.
Rainfall (on 14 days), - - - -	·729 inch.
Greatest Daily Rainfall (on 6th), - - -	·174 inch.
General Directions of Wind - - -	N.W., W.

Remarks.

September, 1893, was favourable throughout. It was a month of average temperature, with fresh westerly and north-westerly winds, and frequent showers, but no heavy rains near Dublin. At times the nights were very sharp, and even frosty, but, on the other hand, much bright sunshine was enjoyed by day. Towards the close the autumnal tints in the foliage were lovely beyond compare.

In Dublin the arithmetical mean temperature (55·9°) was as nearly as possible equal to the average (55·8°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 54·8°. In the twenty-eight years ending with 1892, September was coldest in 1886 and in 1882 (M. T. = 53·0°), and warmest in 1865 (M. T. = 61·4°). In 1880, the M. T. was as high as 58·6°; in 1879 (the "cold year"), it was 54·3°; in 1887, 54·0°; in 1888, 54·4°; in 1889, 55·8°, or exactly the average; in 1890 it was as high as 59·6°; in 1891, it was 57·6°, and in 1892, 54·5°. So warm a September as that of 1890 had not occurred for a quarter of a century.

The mean height of the barometer was 29·848 inches, or 0·062 inch below the corrected average value for September—namely, 29·910 inches. The mercury rose to 30·345 inches at 9 a.m. of the 12th, and fell to 29·052 inches at 9 a.m. of the 29th. The observed range of atmospherical pressure was, therefore, 1·293 inches—that is, a little more than one inch and a quarter.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 54·8°, or as much as 6·5° below the value for August, 1893. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·476), the mean temperature was 55·5°, or exactly equal to the average mean temperature for September, calculated in the same way, in the twenty-five years, 1865–89, inclusive (55·5°). The arithmetical mean of the maximal and minimal readings was 55·9°, compared with a twenty-five years' average of 55·8°. On the 5th the thermometer in the screen rose to 72·0°—wind, S.S.W.; on the 21st the temperature fell to 38·2°—wind, N.W. The minimum on the grass was 31·7° on the 24th. On the 21st the grass minimum was 31·9°.

The rainfall was only ·729 inch, distributed over as many as 14 days—the rainfall was thus considerably below the average. The average rainfall for September in the twenty-five years, 1865–89, inclusive, was 2·176 inches, and the average number of rainy days was 14·7. In 1871 the rainfall in this month was very large—4·048 inches on, however, only 13 days. On the other hand, in 1865 only ·056 inch was measured on but 8 days. In 1888, the rainfall was only ·728 inch on 10 days; in 1889, 1·043 inches fell on 13 days; in 1890, 2·469 inches on 14 days; in 1891, 2·132 inches on 18 days; and in 1892, 2·631 inches on 19 days.

High winds were noted on as many as 14 days, but attained the force of a gale on no occasion in Dublin. An aurora appeared on the 1st. Lightning was seen on the 8th and 21st. Thunder was heared on the 21st. The atmosphere was foggy on the 3rd, 4th, and 12th.

The month opened with an anticyclone forming over Ireland, where the weather during the first two days was mild and fine, although rather cloudy. In England rain had fallen, and the weather was taking up. In Scotland conditions were still unsettled and rainy. North-westerly winds were prevalent in nearly all parts of the United Kingdom.

During the week ended Saturday, the 9th, the weather, which was at first fair and warm, afterwards became cloudy, showery, squally, and finally cold for the time of year. On Sunday morning an auticyclone lay right over the British Islands, in all parts of which the barometer was high and remarkably uniform, the morning readings varying not one-tenth of an inch, from 30·30 inches at Loughborough, in Leicestershire, to 30·22 inches at Belmullet, in Mayo, and 30·21 inches at Valentia Island in Kerry. The weather was fair and bright after a calm, dewy, and (in places) foggy morning. During the following two days the anticyclone retreated in a south-easterly direction to the Continent and the barometer fell steadily. The wind meanwhile became S.W. in the North, and E. or S.E. in the South, temperature rising considerably on Tuesday—to 72° in Dublin and at Leith, 74° at York and Hurst Castle, 75° at Oxford, and 77° in London, at Loughborough and Cambridge. Wednesday was still hotter in the midlands and south of England, the thermometer reaching 80° at Cambridge and 81° in London; but already a decided fall of temperature had begun in Scotland and Ireland, and was spreading south-eastwards with clouds, rain, and high westerly winds. On Friday a V.-shaped thunderstorm depression travelled south-eastwards across Great Britain, and in its rear temperature gave way still more rapidly, so that Saturday was quite a cool day. In Dublin the mean atmospheric pressure was 29·914 inches, pressure ranging between 30·275 inches at 9 a.m. of Sunday (wind E.N.E.), and 29·570 inches at 9 p.m. of Wednesday (wind W.S.W.). The corrected mean temperature was 58·7°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 57·3°. On Tuesday the screened thermometers rose to 72·0°, on Saturday they fell to 44·0°. Rain was registered on three days, the total measurement being ·252 inch, of which ·174 inch was recorded on Wednesday. Sheet lightning was seen on the eastern horizon on Friday evening. The prevalent winds were S.W. and N.N.W.

The two most striking features in the weatner of the week ended Saturday, 16th, are the low night temperatures at the beginning and the continuous drought, except in the north and the extreme south of the British Islands. During Sunday and Monday a depression was passing south-eastwards from the mouth of St. George's Channel across the Bay

of Biscay to the Peninsula. This disturbance caused heavy rains in the extreme S.W. of England, along the west coast of France, and finally in central Spain. Its presence was made evident from Dublin on Saturday, the 9th, as well as throughout Sunday, by a sheet of cirriform cloud which kept travelling in an upper current from W. to E. over the southern half of the sky. A strong easterly wind at the same time showed that an area of low barometer lay to the southward. As this breeze died down, the nights became very sharp in England and Ireland. At Parsonstown the screened thermometer fell to 36° on Monday night and to 31° on Tuesday night. At Loughborough also the minimum on Monday night was 31°, or one degree below freezing-point. Large depressions now began to pass eastward across Northern Europe, so that for the rest of the week squally westerly (S.W. to N.W.) winds, high but variable temperatures, and cloudy skies—with heavy rain in the extreme north—were experienced. At Glencarron, in Ross-shire, the rainfall of this week was as much as 6 inches. In Dublin the mean height of the barometer was 30·146 inches, readings varying from 30·345 inches at 9 a.m. of Tuesday (wind calm), to 29·923 inches at 9 p.m. of Saturday (wind N.W.). At 4 p.m. of this day a reading of 29·892 inches was recorded. The corrected mean temperature was 56·9°. The mean dry bulb readings in the screen at 9 a.m. and 9 p.m. were 57·1°. On Tuesday the minimum was 40·5°, on Friday the maximum was 70·0°. Light showers fell on Friday evening, yielding only ·008 inch of rain. The prevalent winds were E., W.S.W., and N.W.

All through the week ended Saturday, the 23rd, the atmosphere was in a disturbed state over north-western Europe, and cyclonic conditions prevailed generally. On Tuesday and the two following days a depression of the first magnitude lay between Scotland and Norway, while a series of secondary depressions travelled south-eastwards across the British Islands, keeping the weather in a changeable, squally, showery condition, especially on our northern and north-western coasts. The amount of atmospherical depression may be gauged by the fact that on Tuesday the barometer fell to 28·76 inches at Sumburgh Head, in the Shetlands. On Wednesday evening sheet lightning was seen from the shores of the Irish Sea, St. George's Channel, and the English Channel. At night sharp frost occurred over central Ireland and in some inland parts of England also. At 8 a.m. of Thursday a thunderstorm prevailed in the Scilly Isles, connected with a large secondary depression which at that time lay over Brittany. On the evening of this day massive cumuli and nimbi were seen from the east coast of Ireland passing southwards down the Irish Sea—vivid flashes of lightning shot from these clouds from time to time, and distant thunder was heard at intervals. On Friday night another secondary depression brought a considerable rainfall, followed by a renewed fall of temperature and fresh northerly winds on Saturday. On-

Friday and Saturday showers of snow and sleet fell in Scotland and over the north of England. In Dublin the mean height of the barometer was 29·612 inches, readings decreasing from 29·832 inches at 9 a.m. of Sunday (wind W.N.W.) to 29·330 inches at 3 p.m. of Tuesday (wind also W.N.W.), but rising again intermittently to 29·877 inches at 9 p.m. of Saturday (wind N.W.). The corrected mean temperature was 50·9°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 50·2°. On Monday the thermometer rose to 63·8° in the shade; on Thursday it fell to 38·2° in the shade and to 31·9° on the grass. The rainfall was ·191 inch on four days—·112 inch being measured on Friday. The wind was generally N.W., varying only between W. and N.

A cyclonic distribution of atmospherical pressure over western and northern Europe caused the weather to be of a changeable, showery, and squally character throughout the week ended Saturday, the 30th. At the beginning, no doubt, an anticyclone was found over Ireland in the rear of a depression overlying the Skager Rack, but this high pressure area soon gave place to a new disturbance, which at 8 a.m. of Tuesday had its centre over Donegal, Derry, and Antrim. This system travelled eastwards, causing heavy rain, first in the north of Ireland, afterwards in the north of England. Indeed, on Wednesday thunderstorms occurred generally along the east coast of England and at the Helder, in connection with this depression. By 8 a.m. of Thursday a very decided reduction of pressure was in progress all over the British Islands and Scandinavia and a large and deep depression was approaching the N.W. of Scotland. The showers now became heavier and more frequent in nearly all places, while the wind blew more and more gustily and strongly from S.W. or W. At 8 a.m. of Friday the barometer was down to 28·65 inches at Stornoway in the Hebrides, where a fresh southerly gale was blowing. The reading was 30·00 inches at Nice and 30·06 inches at Lisbon at the same hour. Gales prevailed at many exposed stations—from S.E. in Norway, but from S.W. or W. in the English Channel, and at Pembroke. The showery weather continued to the close of the week; but fine, bright intervals were enjoyed. In Dublin the mean height of the barometer was 29·619 inches, the range of pressure being from 30·079 inches at 9 a.m. of Sunday (wind, W.N.W.) to 29·052 inches at 9 a.m. of Friday (wind, W.S.W). The corrected mean temperature was 54·2°. The mean daily dry bulb reading at 9 a.m. and 9 p.m. was 53·1°. On Sunday the thermometer fell to 38·9° in the shade; on Thursday it rose to 63·5°. Rain fell in measurable quantity on six days, the total precipitation being ·278 inch, of which ·060 inch was referred to Thursday. The prevailing winds were westerly (W.N.W. to S.W.). Lunar rainbows were seen at Greystones, Co. Wicklow, on Thursday evening. Thunder and lightning occurred in many parts of Ireland in the course of the same night.

The rainfall in Dublin during the nine months ending September 30th amounted to 15·108 inches on 122 days, compared with 10·968 inches on 112 days during the same period in 1887, 17·992 inches on 131 days in 1888, 19·936 inches on 147 days in 1889, 20·855 inches on 151 days in 1890, 18·020 inches on 135 days in 1891, 19·910 inches on 150 days in 1892, and a twenty-five years' average of 19·734 inches on 142·8 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in September, 1893, was ·750 inch distributed over 12 days. Of this quantity ·150 inch fell on the 25th, and ·140 inch on the 6th. At that station the rainfall since January 1, 1893, has been 17·091 inches on 118 days, compared with 23·883 inches on 125 days in the same nine months of 1892.

At Cloneevin, Killiney, Co. Dublin, the rainfall in August, 1893, was 2·39 inches on 20 days (the maximal fall in 24 hours being ·37 inch on the 20th), compared with an eight years' average of 2·845 inches on 15·25 days. In September, 1893, only ·46 inch fell at Cloneevin on 11 days. The maximal fall in 24 hours was ·14 inch on the 6th. On an average of eight years the September rainfall at this station has been 1·767 inches on 12·5 days. Since January 1, 1893, 13·90 inches of rain have fallen at Cloneevin.

SYMPHYSEOTOMY.

There is a boom now-a-days in symphyseotomy which would rejoice Sigault if he could revisit the glimpses of the moon. In the *American Practitioner and News* (June, 1893), Dr. T. S. Bullock devotes most of his Report on Obstetrics to the operation. We extract the following passages:—"It has been suggested by Dr. I. Edwin Michael, of Baltimore, that the sphere of symphyseotomy is not limited to pelvic deformities. He says there are cases in which it is more imperatively demanded than in contracted pelves. There are face presentations wherein anterior rotation of the chin does not take place. In such a case, if version were impossible, with a fixed and jammed chin, nothing could be gained by delay, and formerly embryotomy was the only procedure practicable. He, after experimenting with a fœtus and a pelvis with the soft parts attached, is convinced that the operation of symphyseotomy is perfectly feasible, and states that he will attempt to so deliver the first suitable case presenting, and asks that it be given a trial. . . . The outlook for symphyseotomy is certainly encouraging, and it bids fair to win for itself a permanent and honorable position as a life-saver. The danger is that it will be again brought into disrepute by becoming the fashion and being unwisely and unadvisedly performed. It is certainly a safe operation, and when it is brought into competition with the Cæsarean section will doubtless carry the day both with the patient and her family."

PERISCOPE.

A NEW ILLUSTRATED DICTIONARY OF MEDICINE, BIOLOGY, AND COLLATERAL SCIENCES.

DR. GEORGE M. GOULD, already well known as the editor of two small Medical Dictionaries, has now nearly ready an unabridged, exhaustive work of the same class, upon which he and a corps of able assistants have been uninterruptedly engaged for several years.

The feature that will attract immediate attention is the large number of fine illustrations that have been included, many of which—as, for instance, the series of over fifty of the bacteria—have been drawn and engraved especially for the work. Every scientific physician will also be glad to have definitions of several thousand commonly used terms in biology, chemistry, &c.

The chief point, however, upon which the editor relies for the success of his book is the unique epitomisation of old and new knowledge. It contains a far larger number of words than any other one-volume medical lexicon. It is a new book, not a revision of the older volume. The pronunciation, etymology, definition, illustration, and logical groupings of each word are given. There has never been such a gathering of new words from the living literature of the day. It is especially rich in tabular matter, a method of presentation that focuses, as it were, a whole subject so as to be understood at a glance.

The latest modes of spelling certain terms, as adopted by various scientific bodies and authorities, have all been included, as well as those words classed as obsolete by some editors, but still used largely in the literature of to-day, and the omission of which in any work aiming to be complete would make it unreliable as an exhaustive work of reference.

The publishers announce that, notwithstanding the large outlay necessary to its production on such an elaborate scale, the price will be no higher than that of the usual medical text-book.

SNORING.

IN the San Francisco *Pacific Medical Journal* Dr. Remondino publishes an interesting and amusing paper on "How shall we Sleep?" from which the following is an extract:—"We would advise our readers to read Catlin's little work entitled 'Shut your Mouth,' wherein he discusses the bad effect of sleeping with a widely-gaping mouth, and wherein he gives his observations among Indian tribes as to how this evil habit is there unknown, as it is only engendered by the faulty resting of the head during sleep. An Indian always uses a hard material for a pillow, which he places only under the head but not under the shoulders; this throws

his head forwards on to the chest, which closes his mouth and forcibly prevents all snoring—something which would never do for a well governed and discreet Indian, especially when other Indians are about on the lookout for stray scalps. Mouth breathers, according to Catlin, have bad teeth, and with time bring about a stupid cast of countenance; a gaping mouthed stoic is a physical impossibility. Mothers should bear this in mind. All great men have had closed mouths—see that your child sleeps with only its head on its pillow, otherwise it will never become president of the United States, as these have invariably slept like Sitting Bulls or Osceolas and with their mouths shut. We are, as a race, the great snorers of creation—we are not speaking of ourselves particularly but collectively, and in general of the European family—a result greatly due to our bad posturing during sleep. We throw our heads too far back altogether for either any useful purpose or comfort—hence our snoring. In the spring of 1865 we were post surgeon to a military prison near the old Hampton Seminary on Chesapeake Roads. One of the guards—belonging to a detachment of the Third Pennsylvania, Heavy Artillery, of which Dr. Bancroft, now of Denver, Col., was surgeon—in going through the prison barracks one warm afternoon, heard an unusual groaning going on, which he could not locate. The groaning sounds were finally fixed as coming from below the flooring at about the centre of the main hall. This was pried up and to our surprise there lay a broadchested bounty jumper, snoring like a porpoise. He had constructed or dug a tunnel from this point to the water's edge on the outside of the stockade, and having seen daylight through a small hole, he had returned to wait for night to effect his escape. Whilst on his back, weary with toil, waiting for night, and not daring to come out, he unconsciously fell asleep and his weeks of work were brought to nothing by his inconsiderate habit of snoring."

MILK AND TYPHOID.

We take the following instructive facts from the August issue of the Sacramento *Occidental Medical Times*:—"In June an epidemic of typhoid fever broke out in Oakland, opposite to San Francisco, on the other side of the bay. All the early cases had taken milk from the same dairyman, who was supplied from a certain ranch. This was immediately inspected. The 80 cows were healthy, but the ranch was very filthy. The owner and an employé had been ill with typhoid fever for several weeks in different houses. The evacuations had been thrown carelessly on the ground. Water to wash cans and to adulterate milk was taken, usually, from a small creek which ran near these houses, and occasionally from a well on the hill side below the yard. The water from the creek was piped into a tank near the well." On analysis the well-water was pronounced fit for use; that in the tank contained ten times as much

organic contamination as a first-class water and bacteria in great numbers. In 391 cases reported 288 patients had taken milk from the infected ranch. 31 deaths occurred.

THE MACKAY CASE.

It will be remembered that some months ago Mr. John Mackay, the Californian multimillionaire, was severely wounded in the back by a pistol bullet fired at short range by a crank, who immediately attempted to end his own life. Dr. J. W. Keeney and Dr. J. F. Morse, of San Francisco, were in attendance, the latter in consultation. Upon Mr. Mackay's recovery, bills were duly rendered, Dr. Keeney's being 7,500 dols., and that of Dr. Morse 5,000 dols. Mr. Mackay regarded the amounts as excessive, and declined to pay. Suits were commenced, but a compromise was subsequently effected, the bills being reduced to 5,000 dols. and 3,000 dols. There has been a good deal of comment on this case in the lay press, and medical journals have noticed it without much knowledge of the circumstances governing the case. It appears that Dr. Keeney, who saw Mr. Mackay within a few minutes of the shooting, attended him for one month and eleven days. During this period a great deal of time was devoted to the case, the medical attendant frequently remaining all night. The wound progressed favourably, but an intercurrent complication of appendicitis caused much trouble, at one time becoming so serious as to imply a radical operation which, we understand, was actually contemplated. We have no sympathy whatever with the idea that because a man is wealthy he should be the victim of extortion. But when a man of great wealth is in imminent danger of his life, under circumstances that require the greatest possible care and the closest attention, it certainly seems reasonable that he should contribute a proportionately slight pecuniary acknowledgment of gratitude for his recovery. A few additional years of life can hardly be estimated in dollars, nor, perhaps, can the climate of California be lightly exchanged for any other. The regrettable feature in the whole matter was the compromise. This tax on professional good nature is becoming too common, and if charges in proportion to the services rendered and the responsibilities involved were more frequently made, we would hear less complaint of excessive fees. In this connection it is exceedingly interesting to note that Mr. Mackay, as one of the executors of the will of the late Mrs. Fair, was allowed 26,000 dollars, though the services were probably merely clerical. Judge Mesick, in the same case, as attorney for the estate, received 20,000 dols. for the responsibility and about fifteen minutes in Court. We do not regard these fees as excessive, and have no doubt that they were cheerfully paid by the heirs. The contrast, however, between 12,000 dols. and 46,000 dols. is very suggestive, especially when it is remembered that the former sum was scaled down

to 8,000 dols. Assuming, therefore, a parity in skill between financier and attorney, and physician and surgeon, and that an equal amount of labour was performed in each case, we find that the value of Mr. Mackay's life is to Mrs. Fair's estate as 4:23; on which showing comment is needless.—*Occidental Medical Times.*

INOCULATION OF ERYSIPELAS FOR CANCER AND SARCOMA.

The *Medical Record* summarises a paper on this subject contributed to the *American Journal of Medical Sciences* by Dr. William B. Coley. This surgeon had 10 cases of his own and collected 28 others. In 23 of these the erysipelas was accidental, in 15 inoculated; 17 were cases of carcinoma, 17 of sarcoma, 4 doubtful. Of the first, 3 were permanently cured, and one—probably carcinomatous—was well five years after; 10 improved temporarily. One patient died of the erysipelas on the fourth day; 7 of the 17 sarcomatous cases were well from one to seven years after the erysipelas. Two deaths occurred in 44 inoculations. Dr. Coley's conclusions are as follows:—1. The curative effect of erysipelas upon malignant tumours is an established fact. 2. The action upon sarcoma is more powerful than upon carcinoma in about the ratio of 3 to 1. 3. The treatment of inoperable malignant tumours by repeated inoculations of erysipelas is both practicable and not attended with great risk. 4. The curative action is systemic, and probably due chiefly to the toxic products of the streptococcus, which products may be isolated and used without producing erysipelas. 5. This method should not be employed indiscriminately until further experiments have proved its limitations.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Ophthalmic Atlas.

Mr. Frank Haydon has designed a series of plates for recording pathological conditions of the fundus by means of superimposed layers of colour—viz., orange red, black and enamel white. By the aid of any ordinary pocket knife (not too sharp) each layer may be exposed separately. It is found preferable to hold the knife like an ordinary penholder, and to *scrape* (not scratch) with the blade held at a slight angle, the point being used only for minute details. The layers are intended to be of sufficient thickness to allow of any alteration (such, for instance, as diminishing the size of a vessel, or even its entire obliteration) without exposing the layer immediately beneath. The plates are produced in two forms—No. 1, without the vessels; No. 2, with vessels inserted, in books of 25 and 50, with perforated and gummed edges, at a very moderate price, by Down Bros., 5 St. Thomas's-street, London, S.E. It

is hoped that these plates will prove of service in recording pathological conditions with the least possible trouble for clinical and statistical purposes.

Diagrams for Recording Ophthalmoscopic Observations.

Messrs. Danielsson & Co. have published very useful diagrams of various kinds to facilitate the recording of eye cases. They are in four pairs (right and left), and consist of—1, cornea; 2, cornea and eyelids; 3, fundus oculi (small); 4, fundus oculi (large); they are only in outline, uncoloured, and gummed at back. We have no doubt but that they will be found most useful to anyone anxious to take accurate notes of his eye cases with the least possible labour. They can be obtained at 52 Beaumont-street, Portland-place, London, W., at a very moderate charge.

Fletcher's Thermo-Urinometer.

This is an adaptation of Fletcher's Patent Thermo-Hydrometer for use as a Urinometer. A most delicate and sensitive thermometer is blown in one piece with the urinometer, so that the physician, when taking the specific gravity of a sample of urine, does not incur the inconvenience

of having to employ a separate thermometer, or of making random allowances for differences in temperature. The Thermo-Urinometer is fitted into a small leather tubular case which packs inside a graduated urine-testing cylinder. The whole is contained in a handsome leather outer case which may be easily carried in the breast pocket.

This very ingenious and useful instrument may be obtained through any surgical instrument dealer, or direct from Messrs. Fletcher, Fletcher & Stevenson, of 21 Mincing-lane, E.C., London. The price, complete, is seven shillings and sixpence.

THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

DECEMBER 1, 1893.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XIV.—*Scientific Teaching in Medicine.*[a] By C. J. NIXON, M.B., LL.D. Univ. Dubl.; M.D. (Hon. Causâ) R.U.I.; Physician-in-Ordinary to the Lord Lieutenant; Professor of Medicine in the Catholic University; Senior Physician to the Mater Misericordiæ Hospital; and Member of the Senate of the Royal University.

THROUGH the kindness of my colleagues I have had the honour of filling the office of Dean of the Medical Faculty for a period of four years. This prolonged term of office is quite unprecedented in the history of this School, and I gladly avail myself of the opportunity of expressing my thanks to those with whom it has been my good fortune to be associated in the work of medical teaching. Many changes have taken place in the *personnel* of the faculty since I first became one of its members. The arm of the Destroying Angel has stricken many times, and of those who were Professors here when I was a student, but one is left to represent the old staff. The School, however, lives on, presenting, I am glad to say, the traits of vigorous youth, and attracting no small share of attention and sympathy from those who are interested in the progress of University Education.

One of the privileges of being Dean of the Faculty is that of

[a] Introductory Address delivered at opening of Session 1893-4, in the Medical School of the Catholic University, on Tuesday, October 31, 1893.

delivering an address introductory to each session, so that if I had exercised my right of addressing you, this occasion would be the fourth in succession on which I might have endeavoured to bespeak your attention. I can only say that I heartily congratulate you on having escaped three such ordeals; nor would I have ventured to inflict one upon you to-day but for the express wish of my colleagues, and for reasons which I shall mention further on.

INTRODUCTORY ADDRESSES.

I am, personally, unfavourably disposed to formal annual addresses to medical students, the custom in connection with which would, I think, be "more honoured in the breach than in the observance." Advice, to be forcible, should be leavened by example; hence, probably, it is that most of those annual homilies which are produced with so much labour are attended with but little results. Men are always glad to hear words of wisdom from those leaders in the world of thought who are either the pioneers of the world's progress, or the active agents in the carrying of reforms necessary for our intellectual and material advancement. But, in the absence of such men, the annual addresses to medical students have, more or less, ceased to be attractive, and cannot certainly be regarded as indispensable. Divinity students, and those of Law and Engineering, have not had the advantage of "The Introductory," and, so far, the loss of it does not seem to have been felt. It has come to be recognised that young men preparing for professions are entitled to that joyous sense of youthful responsibility which belongs to them as University students, and which should be fostered by example and precept, rather than crushed by dogmatism. There is some force in the injunction given to students by Lessing—"Think wrongly if you like, but think for *yourselves*." Spoon-feeding in professional knowledge, at any stage, is fit only for mental invalids; you who come to us with, I hope, healthful and vigorous minds, have within yourselves a fund of that stimulus which will help you to dispense with much formal aid—the love of Knowledge for its own sake alone.

Within the past five or six years very considerable changes have been effected in this School of a sufficiently progressive character to render an account of them a matter of public

interest, and, in directing attention to them, I purpose briefly, and within a necessarily restricted compass, to discuss the position of those branches of scientific medicine which form the chief burthen of the work done here.

A SCHOOL OF MEDICINE AN OBJECT OF PUBLIC INTEREST.

I would first of all point out that it is quite an error to suppose that the progress of a school of medicine is a matter which concerns only those who are responsible for its organisation. Its progress much more closely concerns the public at large. It is here that young men are taught that which is the aim and business of their lives. They come to us young and inexperienced, impressionable for good or evil, and upon the lessons which they learn, and the habits of thought they acquire, depends the course of their future, whether that be one of usefulness to their fellow-man and honour to themselves, or one of failure and disappointment. Apart, too, from its teaching purpose, a medical school fulfils another function. It is a centre in which is collected a number of earnest and thoughtful men, each one interested in the progress of his own special department, adding to the storehouse of facts, and aiding by investigation and research the aim of medicine in relation to disease and its prevention. It is scarcely possible that the work of such men can be without influence upon their fellows, or that the community at large will not be the gainers by their labours. A school of medicine, like the University of which it forms a part, may be regarded as a fair index of the intellectual life of the nation, and no small degree of material prosperity or the reverse may be traced to its success or failure. The nature of the work done in it may, too, be regarded as a measure of what is taking place in the world at large from the fact that medicine is probably more sensitive to changes outside itself than any other branch of human knowledge. It deals not alone with physical but with psychical phenomena—with the social influences of wealth and poverty; peace and war; birth, development, and decay. Everything that affects the environment of the individual must influence the conditions of his mental and physical state, and so lead the physician into trains of inquiry, into the varying phenomena of existence, and the diseases that follow in their wake. For these reasons it is a matter of general interest to show how this school stands as a centre of medical teach-

ing, to analyse the work it has done, estimate our gains, note our defects, and formulate, if possible, schemes for their redress.

In endeavouring to point out the present position of medicine, considered only in its scientific aspect, I need hardly say that the description attempted of the successive stages of development of each branch must be sketchy in character, and that only those developments which mark eras in progress can be noticed.

SCIENTIFIC POSITION OF MEDICINE.

It will be conceded by all that the present position of medicine as a science depends upon the progress which has been made, especially during the latter half of the present century, in those subjects upon which it rests as on a tripod—viz., anatomy, physiology, and pathology.

ANATOMY.

Of Anatomy, I need say but little. It holds, and always will hold, in medicine the position of being the keystone of the arch, the basis upon which are built all other branches of medical knowledge. Without an accurate idea of the conformation of the body, and of its integral parts, it is obvious no insight could be acquired into the functions of the various organs and tissues, and the mode of their development. From structure to function is a natural transition, hence the anatomists may claim that by their earnest, patient, and continuous efforts, they have laid the foundation for physiological research. Early in the present century the microscope was introduced as an instrument of investigation, and by its means, chiefly owing to the labours of Bowman, the study of minute anatomy or histology, especially in reference to embryology, or development, gave so great an impetus to the entire subject that it may be said to have placed it almost on a level with the exact sciences. By the aid of the microscope, Schleiden discovered the cellular structure of vegetable tissues, whilst, a little later on, Schwann demonstrated the fact that all living structures are made up of minute particles of living tissue called cells, which, subsequently, the physiologist determined to be the seat and source of all forms of vital activity. It was about the same time that Mohl gave the name of "protoplasm" to the hyaline material which forms the lining of cells in plants, a term subsequently given to the essential constituent of all living structures.

It is scarcely necessary to dwell further on the light which was shed upon the various structures of the body by the study of histology. No branch of human knowledge represents more thorough and painstaking investigation than does this one—there is none that testifies more to the wondrous power of man in unlocking the mysteries of nature. Whether we are to regard anatomy in the light which it throws upon the processes of development, or in that which it sheds upon the structure of such intricate organs as the eye, the central nervous system, the various glands, &c., it is impossible not to recognise its study as the foundation upon which the superstructure of medicine is built; and it is because the foundation has been well and carefully laid that the edifice raised upon it has such strong and goodly proportions.

PHYSIOLOGY.

Turning now our attention to physiology we find that, unlike the progress which has been made in anatomy—a progress which has been steady, and, except at the time of the introduction of the microscope into use, free from those convulsions of thought which constitute epochs or eras in the history of a science—physiology has developed not by stages but by bounds, each period of change revolutionising that which was learned or taught beforehand. In 1628 Harvey discovered the circulation of the blood, an event which led at the time to a scientific *renaissance*. Before this the crudest notions prevailed with regard to the processes of life. The idea of the circulation was that the blood swayed backwards and forwards in the veins "like the tide of Euripus between Attica and Eubœa." At this time anatomy was but in its infancy, chemistry and pathology were almost unknown, and the knowledge of zoology and botany might be said to be confined to that obtained by studying the natural history of drugs employed in the treatment of disease. Some degree of order in thought resulted from Harvey's discovery; it gave a special stimulus to the study of anatomy, and awakened an interest in the study of physiology which, under the deductive method of inquiry, led to considerable speculation regarding the origin of life and the vital functions generally. The progress made was, however, slow and unequal. Theorising took the place of observation. It was considered an evidence of high intellectualism to philosophise;

to observe or experiment was regarded as fitted only for those of inferior mental mould.

RELATION OF PHYSICS AND CHEMISTRY TO PHYSIOLOGY.

When, however, physiology by a gradual process of transition became a science of induction, when observation and experiment were made preliminaries to induction, Helmholtz mentions some curious instances which may be cited as showing the position physiology then held, and the prejudices which it had to overcome. He, himself, was strongly urged by a colleague in the University, who interested himself in the reorganisation of the medical school, to divide the subject of physiology so as to be left free to devote himself exclusively to the intellectual part of it, whilst the experimental part could be undertaken by a colleague of inferior mental calibre, but quite good enough for that purpose. Not long before it was thought that to examine with the stethoscope was a crude method of investigation, that it lowered and debased the patient, who was after all a human being, and that a physician with a clear mental vision did not need such aid. In reference to the use of the ophthalmoscope, a celebrated surgeon gave it as his opinion that it was dangerous to allow crude light into the eye; whilst another said that it might be useful for physicians with bad eyes—his, however, were good, and he did not need to use it. These are instances which show how much the tendency of opinion at the time was aganist the use of experiment as a means of investigation of phenomena. Authority and prescription dominated procedure both in practice and in teaching. But an unseen force was steadily leading up to an inevitable change in the methods of inquiry. The study of natural philosophy had attracted the attention of the keenest intellects; the laws which had been discovered in mechanics, hydrostatics, optics, acoustics, electricity, and magnetism, began to be applied in the explanation of the processes of life, and the experimental methods employed in the physical laboratory were borrowed by the physiologist to determine the mechanics of the circulation, the laws relating to muscular and nervous responses to stimulation, the processes of absorption, and the phenomena affecting the special senses. About the same time chemistry had been making rapid strides, and great attention had been given to the study of organic bodies with the result that many, which had been regarded as the

product of vital processes, were made in the laboratory. It soon came to be recognised that, for the most part, conditions which were supposed to be the result solely of vital energies, were capable of being split up into processes identical with those met with in the non-living world, so that, with some notable exceptions—especially those relating to absorption and certain nervous phenomena, and with the full admission that physiology can never become more than a mere branch of physics and chemistry—we have come to recognise that the true method of studying a vital phenomenon is to analyse it into its *measurable* physical and chemical constituents.

It is not difficult to realise the effect of the application of these sciences to the methods of physiological inquiry, and the origin and scope of modern physiology dates from their use. It dates from the time of Joannes Müller of Berlin, followed by those whose names are household words to us all—Brücke, Du Bois Raymond, Ludwig, and Claude Bernard. It is important to note that nearly all those great men were physicists as much as physiologists, and that most of the methods of investigation employed by them have been designed and in most instances made by themselves. With these notable exceptions, it may be said that to these men alone is due the scientific position held by physiology at the present day, though England can claim, through three of her sons, that she, too, has made three landmarks in its history—the circulation of the blood discovered by Harvey, the functions of the anterior and posterior roots of the spinal nerves by Sir Charles Bell, and the reflex function of the nervous system by Marshall Hall.

WHAT MEDICINE OWES TO EXPERIMENTAL PHYSIOLOGY.

In the routine practice of medicine and surgery we are apt, perhaps, to lose sight of what we owe to physiology, especially to experimental physiology. From experiments upon animals we have learned the mechanism of the sounds of the heart, the position of each sound in the cardiac cycle, and the conditions of the cardiac muscle. To these experiments we can trace most of what is known regarding the pulse; the conditions which affect its rate and tension. So, too, with the phenomena of respiration and the causation of cough. In studying the different forms of paralysis of the cranial nerves, we are utilising the researches of Reid; in observing lesions of the

vaso-motor system we are dealing with phenomena which attracted the energies of men like Pourfour du Petit, Schiff, Goltz, and Gaskel; in noting disturbances affecting the brain and spinal cord we are drawing upon the information supplied to us by the experimental observations of Hitzig, Fritsh, Ferrier, Brown-Séquard, Marshall Hall, and Charles Bell. I do not in any way exaggerate when I affirm that all that is exact in medicine which refers to organic function is based upon the results obtained by painstaking and laborious experimentation. So great has been the progress made, so difficult is it to master all the facts that have been ascertained before any further development can be made, or fresh fruit garnered by those who represent continuity of work in this branch of medicine, that physiology has necessarily become specialised as a subject of teaching, and no modern school can afford to permit any teacher to deal with it without requiring that he should give to it his undivided attention.

INFLUENCE OF PHYSIOLOGY ON PATHOLOGY.

The influence which the study of physiology has exercised upon its twin sister, pathology, is easily understood. As physiology is the science of normal function, so pathology represents to us the deviation from the standard, the points of departure from health, the causes which produce such aberrations of function, and their effects upon the organs and tissues of the body. A few words will suffice to deal with the progress made by pathology during the century. Like physiology it, too, has had its periods of revolution, one of which may be regarded as probably the most pregnant of potentiality in the history of medicine—viz., the study of those minute vegetable cells known as bacteria, and their effects when engrafted on the human organism.

In 1760 Morgagni published his celebrated treatise, in which, for the first time, the attempt was made to localise disease to *particular* organs of the body, whilst a most accurate account was given of the anatomical changes produced as a result of the morbid action. There was, however, no attempt made by Morgagni to indicate with any degree of precision the ætiological factors in the production of disease. In the first decade of this century Bichat went a step further, and localised pathological changes in certain tissues of the organs of the body. Then came,

late in the "fifties," the epoch-making discovery of Virchow, who published his work on cellular pathology, a work which raised pathology from being, as it then was, a repository of dry disjointed facts, disjointed in their relation to each other, to the rank of a science, a science based on ætiology, and constituting, in conjunction with therapeutics, the essential part of Modern Medicine. What a monument of work does not Virchow's life represent! How keen and penetrating has been his vision, how cogent his reasoning! Starting with an investigation of all that had been done by his predecessors, whose researches and observations he verified for himself, he carefully extended the scope of their inquiries by physiological experiment and clinical observation until he obtained that result which now constitutes the cardinal element in the explanation of all diseased processes.

Schwann and Goodsir had demonstrated the cell as the vital unit of all organised structures. Under normal physiological conditions these cells had to perform a definite function, retaining their original and characteristic forms so long as the function performed by them was normal. Virchow, by a careful study of the life-history of the cells, noted certain changes occurring in them, connected these changes with perversion of function, and working still further backward, was led to study the altered condition of growth and environment that determined both alteration of function and of structure. He thus established such a correlation between normal and pathological biology, that in many cases it was almost impossible to determine where the one becomes merged into the other; and, furthermore, he showed that the marked changes observed in the altered cells, tissues, and organs of the body were shown to be as much the result of altered environment as the cause of perverted function. The effect of Virchow's teaching was far-reaching. When it was ascertained that the bodies of animals were composed of structures similar in many respects to the analogous parts met with in man, and that the cells composing these parts were also alike as regards their structure and function, comparative pathology became an object of close study and observation, culminating in those experimental researches which have influenced to so marked a degree our knowledge of disease and its treatment.

BACTERIOLOGY.

Meanwhile, as Virchow was pursuing his researches, a branch of biology, surpassing in the interest which surrounded it, was making steady progress—viz., bacteriology, adding another to the quota which all branches of human knowledge pay to medicine. We have the authority of Bacon that, even in his day, it, above all the other professions, could claim the palm for learning. How much more can this distinction be claimed for it to-day? When Latin served the purpose of welding all Western races together, it was the language of medical literature. Medicine, alone, amongst the faculties of a University, has an unbroken tradition of over 2,000 years from the Greek; it retains even still the relics transmitted to it by the physician of Cos. I have touched on the contributions which it has exacted from the natural and experimental sciences, whilst to pathological medicine in particular every branch of biology must bring a part of its treasures—anthropology, ethnology, and comparative anatomy. Thus we can see, as has been well said, at one end, peoples, nations, and races; at the other, a tiny speck of nucleated protoplasm, which not alone appears capable of supplementing our knowledge of the larger units which constitute the organs and issues of the body, but the study of which is probably destined more than any force we know of in nature to influence the future of the human race.

Time does not permit of my dealing with the influence which bacteriology has exercised upon pathology, with which it is now indissolubly connected; or of my dwelling upon the benefits which its study has conferred in relation to commerce, or to the saving of life in animals and in man.

PASTEUR'S RESEARCHES.

The history of bacteriology, so far, may be said to be written in the life and labours of Pasteur, supplemented by the records of what has been done by Lister, Chauveau, and Koch. There is no tale of Jules Verne which is more capable of exciting the imagination than the story of Pasteur's work. Having demonstrated the dependence of fermentation of different kinds upon different living organisms, which he classified into those that live in air and those to which air is fatal—aerobic and anaerobic organisms—he formulated his method

of dealing with diseases affecting vinegar and wines, and almost at a stroke abolished the maladies affecting both. He next directed his attention to the investigation of the diseases of the silkworm, at the time when the silk husbandry in France was in a state of ruin. Having discovered the minute organisms which caused the disease in the blood of the worm, he followed them through all the phases of the insect's life—through the eggs, through the worm, through the chrysalis, through the moth. As by an enchanter's wand, at Pasteur's bidding, the disease was almost eradicated. Then came his "Studies on Beer," and, subsequently, those observations and experiments upon the germ theory of disease which led him to adopt the principle of *virus attenuation* in the treatment of such diseases as fowl cholera, anthrax, quarter evil, and, finally, hydrophobia. Meanwhile, the clear mind of Lister was seizing upon the germ theory of fermentation and putrefaction. The organisms which produced both were in the atmosphere. If they came in contact with an open wound, pus-formation was the result. A further fact was established by Lemaire in an adverse criticism of Pasteur's views—viz., that the presence of carbolic acid was inimical to the life of the higher animals and plants, and also to the lower organisms; the addition of a small quantity of carbolic acid to fluids in which fermentation and putrefaction ordinarily take place preventing the incidence of these processes. From these two data Lister built, step by step, the theory and practice of antiseptic surgery—a theory and practice which have saved thousands of lives and revolutionised the treatment of wounds and the routine of surgical practice. Surely the advent of the science of bacteriology may claim to be a second scientific *renaissance*.

ACTION OF BACTERIA IN DISEASE.

Before leaving the subject I may be permitted to mention an instance suggestive of the *rôle* played by bacteria in disease. We know that in the process of fermentation yeast grows and multiplies with extraordinary activity, splitting up the sugar into CO_2 and alcohol, till its further progress is arrested by the alcohol which is a product of its own activity. It is precisely similar with bacteria, when taken into the body as in any infectious fever. The organisms multiply at the expense of the fluids of the body, form ptomaïns which, like the formation of alcohol

in fermentation, bring the action of the microbes to an end. It is to the presence of these ptomaïns in the blood that we may attribute the feverish disturbance that is set up—a disturbance unfortunately that is often fatal to the host as well as to the invader. An interesting experiment serves to show how the cells of the body resist the invasion of bacteria. A small quantity of a culture of known virulence was injected into a rabbit, a local inflammation followed, terminating in the formation of a small localised abscess, but no other bad effects followed. In another rabbit a similar injection was given, but, at the same time, a quantity of chloral was injected sufficient to paralyse the leucocytes, general infection rapidly followed, and the animal very soon died. In this instance it was found that the leucocytes examined on the warm stage showed no change of shape, and were perfectly sluggish in their movements. They took no notice of the bacteria when introduced into the subcutaneous tissues, and these then passing into the lymphatic spaces, ultimately reached the circulation, and so led to their widespread diffusion through the different organs with an attendant fatal result. This experiment may be taken as suggestive of the way in which the effects of alcohol taken to excess, or a poisonous influence of a like kind, may lead to an attack of fever, erysipelas, or some septic disease.

BACTERIA IN RELATION TO ANIMAL PLAGUES.

Two instances may be mentioned to show how the progress made by bacteriology has been utilised in the removal of animal plagues. Some eighteen months ago a plague of field-mice in Thessaly and its neighbourhood had assumed such proportions that an entire field of corn was destroyed in a night. Lœffler, who has made such important researches in connection with the organisms of diphtheria, discovered bacteria, the *Bacillus typhi murium*, which are pathogenic for mice of the species *Arvicola arvalis;* the field-mice in Thessaly belonged to an allied species. Preliminary investigations showed that the bacillus was fatal to these also. A culture fluid was carefully prepared, and to this was added pure cultures of the bacillus. It was first shown that the bacillus was harmless to all domestic animals and to man. Peasants came from different districts, each bringing with him a basket of broken bread, which was steeped in the inoculated fluid, and the peasants were dismissed with instructions to put into each mouse-hole a portion of bread. The mice eat

freely of the impregnated bread, with the result that, after some days, dead and dying mice were found scattered through the field. In less than four weeks the plague had disappeared, and the harvest was saved. Professor Bilgard, Director of the Research Station in San Francisco, records a similar procedure, which rescued the country from a destructive "field-bug" of a species akin to the Colorado beetle.

THE FUTURE OF MEDICINE DEPENDENT ON PATHOLOGY AND BACTERIOLOGY.

Of the field that is opened up in connection with Preventive Medicine, and in the treatment of such diseases as cholera, tuberculosis, tetanus, diphtheria, typhoid fever, and infectious diseases generally by the study of bacteriology, it would be at present rash to speak. Much has been done, great advances have been made, and great principles established. It may not be many decades distant when some startling results will be attained. To my mind, it is to bacteriology and pathology generally that we must look for the future of Medicine. Fortunately the methods of inquiry employed, those necessary for the progress, nay, for the existence of the human race, have stood well the strain fomented by misguided and ignorant faddists, but the issues at stake are too vital to be imperilled by what Sir William Gull described as the greatest cruelty in the whole world—the cruelty of ignorance. Experimental physiology and pathology have simply shared the fate which attended great discoveries in science, arts, and medicine. In the last we have had the spectacle of Vesalius, the great reformer of anatomy, being formally cited before the Theological Faculty of Salamanca, and Servetus being burned at Geneva with his book in which he described the circulation through the lungs. For a considerable time after the discovery of the circulation by Harvey, the treating of his doctrine was proscribed by the University of Paris, and to believe in it, led to expulsion from the University and forfeiture of degree. Nor can it be said that the errors taught have been confined to the ignorant. Kant was so blinded by prejudice as to denounce vaccination "as the inoculation of bestiality." History is always repeating itself, and so the men of progress in medicine have had to take their share of contumely and bear more than their share of malice and misrepresentation from the anti-vivisectionists. They have stood

their punishment, for the most part, with the stoicism of the ancient martyr. Yet the provocation to retaliate has been great. Scarcely any great advance in the doctrine of immunity has been made without the individual workers undertaking the risk of watching in their own persons the effects of inoculation of attenuations of the most deadly poisons.

Quite recently Haffkine, in order to test the value of protective inoculation against cholera, inoculated himself with an attenuated virus of the disease. Very considerable constitutional disturbance, lasting for six days and attended with a rise of temperature, resulted. Hankin, and some eight others, also submitted themselves to the inoculation experiments, and with like results.

ANTI-VIVISECTIONISTS.

These are types of men to whom Canon Wilberforce applies the epithet "inhuman devils." It is, at all events, a relief to learn that there are some devils humane in their instincts. It may be that the Canon is impressed with the responsibility of having to bear a great name—*Stat Magni Nominis Umbra*—or that he believes he has received a double dose of humanity, but it would be well if he were to bear in mind a very old and suggestive proverb:—"If the blind lead the blind, both will fall into the ditch." It is not likely that Canon Wilberforce or the other champions of the anti-vivisection crusade will be able to impede the progress of what is essential to the preservation of man by their fitful spurts of noisy declamation. Many years ago an enlightened Chinese Emperor, Chi Hwangti by name, came to recognise that his country was kept back by its exclusive devotion to the classics of Confucius and Mucius. He accordingly invited five hundred Professors of these subjects to Pekin, requesting them at the same time to bring with them the copies of the works of these authors. Having first entertained the Professors at a banquet, he immediately afterwards buried them alive with their manuscripts. I am far from suggesting that opponents of reform and progress should be dealt with in any such summary fashion; I merely mention the incident as conveying an object lesson. It shows how tolerant we are in the nineteenth century with those who prefer the safety of animals to the extinction of their own race.

REPORT OF THE ROYAL COMMISSION IN REFERENCE TO EXPERIMENTS ON ANIMALS.

In 1876, a Royal Commission, composed of such men as Lord Cardwell, Mr. W. E. Forster, Sir John Karslake, and Mr. Hutton, after receiving evidence of a detailed and elaborate character from, amongst others, Paget, Acland, Lister, Professor M'Kendrick, Turner, and Robert M'Donnell, reported in reference to the discoveries that had been made by experiments on animals, as follows:—"It would require a voluminous treatise to exhibit in a consecutive statement the benefits that medicine and surgery have derived from these discoveries." If this was true in 1876, how much more so is it to-day? How great has been the progress since then! How much is to be hoped for in the future! Those who have spent some time in Brussels can scarcely have failed to visit the Wiertz Museum. Amongst the paintings of this eccentric genius is the remarkable one of the man of the future regarding the things of the past. The principal figure depicts a man of giant form with a gigantic head, for it is intended to represent the men of the future as giants in civilisation as compared with the people of our day. He holds in his colossal palm some curious toys of the present day, which he regards with an expression suggestive of curiosity, amusement, and contempt. To me, gentlemen, that man of the future represents the medicine of the future. The toys are some of our present methods of inquiry, the devices of present-day physicians in endeavouring to satisfy the demands of an over-credulous public, but, probably, the smallest toy, a speck of merely bacterial proportions, which meets the gaze and excites the mirth of the giant, is the Salvation Army of anti-vivisectionists.

THE HISTORY OF THE SCHOOL OF MEDICINE.

It is now time to ask what position the School holds to enable it to cope with the modern requirements of medical teaching, and the advances that have been made in scientific medicine? What has it done to keep the standard of education up to the level of the present day progress? It is not difficult to answer these questions, and both should be dealt with in the strictest truth. Just forty years ago, under the Rectorship of the illustrious Newman, this School passed from the Apothecaries' Hall Company into the hands of the Episcopal Board of the Catholic

University. It commenced its mission under, in some respects, favourable circumstances. Its various chairs were moderately endowed, and it attracted to its halls such men as William K. Sullivan, Lyons, and Hayden. Representing the professional School of the Catholic University, it was, moreover, to be regarded as a protest against the spirit of intolerance and ascendency which prevailed; its establishment was intended not alone as a place where students would be taught the various subjects of the medical curriculum, but also to form a nidus or home where ardent workers, who had attained distinction, or who have given evidence of future promise, might have an opportunity, debarred to them elsewhere, of devoting themselves to the work of teaching and research.

But, on the other hand, many circumstances, unfavourable in their nature, prevented the mission undertaken by the School being as fruitful as it might otherwise have been. An old building was acquired, stunted in proportions, unattractive in appearance, structurally defective and unfitted, even at the time it passed into the hands of the Episcopal Board, for the purposes of medical teaching. It was, however, the best that could be obtained at the time, and, as it had been a medical school, it was assumed that it was quite suitable for the purpose for which it was designed. In the appointments to the various chairs, men were selected to fill those of anatomy and physiology who were practising physicians, holding at the same time the posts of physicians to hospitals, and the two subjects were joined together in the one chair. It is not necessary to dwell on the anomalous arrangement which permitted anatomy and physiology to be treated as one subject, and to be dealt with by practising physicians.

Furthermore, the School was an University School only in name. It had none of the ordinary privileges or advantages of such a School. Its students, like those of a proprietary school, could obtain only the licenses of the Colleges of Physicians and Surgeons. They were completely debarred from the advantage of getting any university medical qualification unless they passed a term in one of the Queen's Colleges, or entered the profession through the portals of the London University. To these disadvantages might be added a sentimental one. The Catholic University School of Medicine, in the early part of its existence, was not fashionable. It was new; its students were

for the most part poor, their blood, perhaps, was not sufficiently blue, and many of those who, had they been mindful of past and present history, should have stretched out a hand to aid a new and struggling institution, regarded it, to say the least, with cold indifference

We have happily lived down this foolish prejudice, and I am fully justified in saying that the School now rests entirely on its merits, and that the support given to it is given warmly and ungrudgingly.

The School pursued what may be termed an uneventful career up to the time when the Royal University was established. It had trained a large number of students who, having obtained licenses in medicine and surgery, filled positions in the various branches of the civil and military services, whilst many attained success as practitioners in medicine and surgery at home or in the colonies of the Empire.

But the necessity for preparing students for examinations of a high standard led to a reorganisation of those chairs in the School which dealt specially with scientific teaching.

In the first place, anatomy was divorced completely from physiology and the subject departmentalised. It was given in charge to a professor who is obliged to devote himself exclusively to his special subject, and is responsible for all matters which relate to his chair.

In physiology the professor, Mr. Coppinger, the distinguished surgeon to the Mater Misericordiæ Hospital, has as his colleague a lecturer who devotes himself exclusively to the work of the chair, which is arranged so as to secure the delivery of courses of lectures suitable for advanced students as well as for those commencing their studies. Histology is made the subject of an elaborate and carefully-organised course, in which students are provided with microtomes and all reagents necessary for an examination of the minute tissues of the body.

The regulations of the Royal University require students to attend a three months' course of lectures on pathology before presenting themselves for the degrees examination. It was the first university in Great Britain to make this requirement, and to institute a special examination in this subject; and I believe this School was the first in Great Britain to appoint a professor of pathology with the obligation that, like his colleagues in the chairs of anatomy and physiology, he should confine himself

exclusively to his special subject, which includes also the teaching of bacteriology.

We have not been unmindful of the requirements of Hygiene or Preventive Medicine as a branch of medical education. A public health laboratory, the first of its kind in Ireland, has also been provided, where those preparing for the examination in sanitary science will find all the necessary facilities for pursuing their studies under the charge of Professor Roche.

Not long since, upon the occasion of one of the visits of His Grace the Chancellor of the University to this School, our Rector, in eloquent and forcible language, pointed to the disabilities under which we laboured as regards our building, and the means at our disposal for teaching. Permit me to quote his words:—"But there is an eloquence, too, that pleads for us in the poverty and squalor with which the teaching of a noble profession is here surrounded. If a visitor were here to-day from any part of the Continent of Europe, from any of those centres which once were illuminated by the teaching of Irish scholars—of Columbanus, of Virgilius, of Kilian, of Gale, ot Scotus—he would ask, with some degree of wonder, 'Is this the home of science which Ireland has provided for the education of her sons?'" Well, since these words were spoken within the past few years—something has been done to diminish to some extent this reproach. A sum of over £4,000 has been spent upon school buildings, and for this sum we are indebted to His Grace the Archbishop, and their Lordships the members of the Episcopal Board. They have, out of slender resources, taken the part of the State in providing us with some of the facilities that were absolutely necessary for teaching purposes. With the sum mentioned, a new anatomical department has been provided and furnished with all the modern accessories appertaining to anatomical work. New chemical, histological, physiological, and public laboratories have been constructed and fitted with the apparatus suitable for each. The Archbishop, out of his private funds, has generously provided the School with a bacteriological laboratory, so that his name will be handed down in the annals of Irish medicine as having been the founder of the first laboratory for the teaching of bacteriology in Ireland. Several valuable prizes have been established, which have led to a healthy and vigorous competition amongst our students.

APPOINTMENTS TO SCIENTIFIC CHAIRS.

The question of the appointments to the various scientific chairs was one, I need hardly say, of serious, nay vital importance, and I am bound to add that, in this matter, the governing body of the School have exercised a wise and careful discrimination. Gentlemen, I am glad to tell you that we have grown our professors on our own soil. They are our choicest flowers, and, notwithstanding their presence here to-day, I must put them on exhibition with the usual note appended—"Catholic University School of Medicine, Gardener." I do so for three reasons—firstly, from a legitimate desire to claim some credit for this School of Medicine; secondly, to show you the stamina of the men who are your teachers; and thirdly—my old association with this place will prevent what I say being taken as intrusive—to point out how much these professors have to do in the future to fulfil the promise of their youth, and how much depends upon them in helping to rekindle the fire of enthusiasm in scientific medicine which, unhappily, in Ireland has been smouldering in obscurity. There is surely no fairer test of attainments and ability than that afforded by an university examination, in which students from every quarter compete in a common arena for degrees, honours, and other distinctions. Granting this, it is interesting to note the distinctions obtained by those to whom is entrusted the teaching of anatomy, physiology, and pathology in the school.

The professor of anatomy, Dr. Birmingham, obtained 1st of First Honours and 1st Exhibition in the 2nd Medical Examination, and 1st of First Honours and 1st Exhibition in the Primary Degrees Examination.

The professor of pathology, Dr. M'Weeney, obtained an Exhibition and Honours at Matriculation Examination; a Scholarship of £150 in the year following; First of 1st Honours and Exhibition of £50 at the B. A. Examination; Studentship in Modern Literature, value £500; First place and 1st Honours at First Medical Examination, with £30 Exhibition; and 2nd Honours and Exhibition of £25 at Primary Degrees Examination.

The lecturer on physiology, Dr. Coffey, obtained in First Medical Examination First Honours and Exhibition, value £30; in Second Arts, First Honours in Chemistry and Biology; in Second Medical Examination, First Honours and Exhibition, value £40; at B.A. Examination, First Honours and Exhibition,

value £50; at Primary Degrees Examination, Second Honours and Second Exhibition, value £25; and at M.A. Examination, First Honours and Studentship, value £300.

With such records it must, I think, be freely conceded that the right men have been selected for the positions which they now fill.

NECESSITY FOR ENDOWMENT OF CHAIRS.

But an important practical question now arises, and one for which I hope a solution will soon be found. If the services of efficient teachers, especially in the scientific departments of medicine, be secured, and if an obligation be imposed upon those teachers not to engage in practice but to devote themselves exclusively to the work of the various chairs, it is but reasonable that they should be assured of such an income as would prevent the *res angusta domi* paralysing instead of quickening energy and enthusiasm. And without energy and enthusiasm no good work can ever be accomplished.

Not many realise to the fullest extent the obligations and responsibilities of a teacher who deals with subjects that may be said to be daily progressive. He must not be a mere parrot for the repetition of what anyone may find for himself in books. If a lecturer is to command respect and fulfil, in the highest sense, his function, he must be himself an earnest and original thinker, and his teaching must be more suggestive than didactic. In working at the confines of human knowledge, in his own special department, he cannot fail to have started in his own mind fresh trails of inquiry, raised doubts in order to solve them, studied obscurities until they have become clear. It is in this way that energy generates enthusiasm. Surely one can plead that men of such a type should receive an adequate remuneration. It is true that some of the best work that has ever been done in literature or science has been accomplished under conditions almost appalling in their wretchedness. A poem of Juvenal describes the misery and degradation of a needy man of letters, lodged amongst the pigeons' nests in the tottering garrets which overhung the streets of Rome, and no one has typified this condition of misery to a fuller degree than did the author of our standard dictionary. Carlisle tells us that Heyne, the son of a poor weaver, whilst editing his Tibullus, slept in a garret, with the floor for his bed and two folios for pillow, and

who often had to live on peascods which he had gathered in the streets. Yet this man created a revolution in classical scholarship. Claude Bernard made most of his celebrated researches in a poor cellar. Some of Koch's best work was that accomplished when holding a lowly position in an obscure town in Germany. But however great may be the incentive to anyone to undertake scientific work in the light of research, dominated by the passionate desire to benefit his fellow man, or gain a step or two towards the goal of human perfection, no one in the present age would expect, with any sense of justice, a teacher to devote his energies to teaching in an university, or in the professional school of an university, unless, in the first place, he is provided with the facilities for teaching, and, secondly, he is secured an adequate reward for his labours. Unfortunately in both respects we are in defect. Just at the time the Royal University was established the capital fund of the Catholic University had become exhausted, and an important source of help at a critical time ceased to be available.

THE SCHOOL A CHARTERED INSTITUTION.

The School soon after this changed its form of management. It passed from the hands of the Episcopal Board and became a chartered institution under the wing of the Endowments Commission. By the charter of incorporation a most perfect machinery has been devised for a wise expenditure of funds; but there are no funds to distribute, and, so far, we may sing with the Latin poet—

> "Cantabit vacuus coram latrone viator."

We have exchanged a state of disendowment for a chartered one of non-endowment. But wise and far-seeing minds see in the change a prospect of bringing through it material aid to the resources of the School. I hope that aid will not be long withheld, and that some steps may be taken to help us in our work.

> "If it were done when 'tis done, then 'twere well
> It was done quickly:"

is a good and wise saw; may it soon be acted upon.

NECESSITY FOR FURTHER EXPENDITURE.

Putting aside the question of endowment, the sum which has recently been so generously bestowed upon the School does not

represent more than a tithe of what is actually required. The public generally are not aware of the very considerable outlay which the maintenance of a modern school of medicine involves. Let me mention some facts which illustrate this point. Within the past ten or fifteen years an unusual degree of activity has been displayed in the English schools of medicine, especially in those of London. In that space of time over £150,000 has been spent in school buildings alone—St. Bartholomew's has spent £52,000; Charing Cross, £20,000; Guy's, £16,000; the London Hospital, £25,000; Middlesex, £8,000; St. George's, £10,000; Westminster, £14,500; and the London School of Medicine for Women, £8,000. In addition to these sums, Guy's Hospital School has spent £21,000 for a residential college, and an additional sum of £6,000 to provide a cricket ground for its students; whilst Middlesex School has spent £10,000 on its residential college; so that the total sum expended within the past ten or fifteen years in London, to promote the interests of medical teaching, exceeds £250,000.

Take another instance of an effort made to develop educational progress. The regulations of the London University require practical instruction in physics, and impose a practical examination in that subject. The University College in Liverpool having had no provision for the teaching of this subject in the School of Medicine, and being unwilling to relinquish the teaching of University students, was driven to take steps for the purpose of extending its teaching of science. The Council of the College put its views as to the necessity of making provision for the cultivation and teaching of the higher branches of scientific knowledge before the public. A meeting was called by the Mayor to consider the project, with the result that at present in Liverpool there is an University College which may be regarded as a monument of the enterprise and generosity of the citizens of that town. In December of last year the new Victoria Building, an extension of the College, was formally opened. The total expenditure so far has exceeded £53,000, of which £44,000 has been already subscribed, Mr. Tate, of Liverpool, giving, for the erection of a Library block, £20,000. The necessary capital for the endowment of a professional chair was fixed at £10,000. Very soon over £30,000 were subscribed for this purpose, and, subsequently, a further sum of £9,000 was obtained to endow a chair of botany. An engi-

neering laboratory was presented to the College by a generous donor in honour of the Queen's Jubilee. Later on a chair of economic science was endowed by Mr. Brunner, and lastly, the professorship of physiology was founded and endowed by a Liverpool merchant—a chair which, in the words of the writer from whom I take the history of the school, "has given fresh impetus to the scientific work of the medical faculty, and has shed lustre on the school by bringing into association with it the well-known name of Professor Gotch, the first occupant of the chair."

THE RELATION OF THE STATE TO SCIENCE.

What a contrast to the encouragement given to scientific teaching with us here! Perhaps it is to the great wealth of England, and the generosity of her leading merchants and others, that the apathy of the State in the matter of scientific endowment may be due. The economic law, that what can be done by private enterprise should not be interfered with, or, perhaps, hampered by State interference, has been the guiding principle on which the Government has taken its position in reference to science. Science, to accept a popular idea of it, is only of value when it can be turned into money; hence the name which England has acquired, perhaps with some degree of justice, that it is a nation of shopkeepers. It may be said to stand alone amongst European States in the apathy which it has shown in the matter of higher education. With the richest capital in the world, the pivot of the world's commercial prosperity, the home of over 5,000,000 souls, it has no teaching University. "The wealthiest country in the world," said the distinguished President of the British Association in his recent address, "which has profited more—vastly more—by science than any other, England stands alone in the discredit of refusing the necessary expenditure for its development, and cares not that other nations should reap the harvest for which her own sons have laboured."

HIGHER EDUCATION IN FRANCE AND GERMANY.

How different has been the policy pursued by other Governments, and how great has been the resulting progress. Take, for example, the condition of higher education in France and Germany, and note the strides it has made in both

countries during the present century. Amidst the throes of the reign of terror, in 1794, a petition was presented to the Committee of Public Safety by Lavoisier, asking that his life should be spared until he had completed some important experiments. The answer to the petition was:—The Republic had no need of savants. What has taken place since? France had at the time the Revolution broke out twenty-three autonomous university colleges in the provinces. Napoleon, with a view of centralisation, crushed them out in order to promote the interests of one great university at Paris. But so low had this university sunk in public estimation, that in 1868 a sum of £8,000 was all that was spent on it for academic purposes. It did not, however, take long for France to shake off her intellectual lethargy. Startled by her position of intellectual barrenness, she set to work to put her educational house in order. She has now rebuilt her provincial colleges at a cost of £3,280,000, and for their maintenance she provides annually £500,000. A century has passed since she declared that the State had no need of savants. Yet, after the late disastrous war, the Institute of France discussed this important question:—"Pourquoi la France n'a pas trouvé d'hommes supérieurs au moment du péril?"—and to this question came the formal reply:—"Because France had allowed its university system to sink to the lowest ebb."

Let us for a moment turn our eyes to Germany. Scarcely a century and a half ago Frederick William, of Prussia, when attending a graduation ceremony in the University of Frankfort, exclaimed in his characteristic bluff fashion, "An ounce of mother wit is worth a ton of university wisdom." Since then what have the universities done for Germany? No country in the world has so fully recognised the necessity of promoting science as one of the most important duties of statecraft. Recognising their inferiority in their university system as contrasted with that of their neighbours, Paris, Bologna, Padua, and Pavia, they did not hesitate to attract teachers from Italy and other centres of intellectual culture, nor did they stint their supplies when re-organising and perfecting their various institutions. A single university like that of Leipzig receives over £40,000 annually—£10,000 more than that given to the three Queen's Colleges in Ireland. Strassburg has had, within a comparatively recent period, her university and library rebuilt at a cost of £711,000, whilst the annual grant to the university

exceeds £43,000. There is no country in the world more economical in her expenditure or more careful in securing a return proportionate to capital laid out; yet Germany spends nearly £400,000 a year out of her taxes on university education. According to Helmholtz, 72 per cent. of the cost of universities is paid by the State, the students paying in the matter of fees a little over 9 per cent. And how glorious for the Fatherland has been the result! It has been the fashion to sneer at the higher educational system in Germany. It is said, "All wisdom in Germany is professional wisdom." But a fair test of the efficiency of the working of any particular system is to be found in the estimate of the results obtained from it; and surely, according to this standard, looking at the material prosperity of the country, her *facile princeps* position in the world of science, her progress in technical knowledge, and, above all, her pre-eminence in all those branches of knowledge which concern medicine, one must concede to Germany the palm amongst nations of having, to her own great advantage, made the most that could be made of the intellectual material at her disposal. Time does not permit me to dwell upon what has been done in Austria, Belgium, and other European countries, in the matter of education under the fostering care of the State.

THE STATE AND EDUCATION IN SWITZERLAND.

Perhaps I might give one instance of the material prosperity of a country being brought about by its influence. It was specially dwelt upon by Lord Playfair in an address delivered some years ago to the British Association. Switzerland is a country destitute of coal and the ordinary raw materials of industry. It is separated from the countries which supply it with these articles by high mountain ranges. Yet by a carefully regulated scientific code of instruction, by means of a system of graded schools, and, above all, by its great technical college at Zurich, Switzerland has become a prosperous manufacturing country.

HIGHER EDUCATION AT HOME.

How dispiriting has been the course pursued by the State at home! How crushing has been the effect of its apathy upon this poor country! How cruelly unjust has been its policy to three-fourths of our population! To what extent the present state of turmoil and discontent, the want of progress, the fierce racial and

religious antagonism, may be traced to the steady and consistent policy of injustice towards Ireland in the matter of education by our Government, I leave to the decision of the impartial student of history. Ever since 1845, when the Queen's Colleges were established, a steady and persistent demand has been made to both Liberal and Conservative Governments to settle this great and vital question, but without avail. It would be a waste of time to go over the well-beaten track of barren promises and crushed hopes. Let me merely enumerate the headings of some of the chapters. The offer of a charter of incorporation for the Catholic University by Sir George Grey in 1866; the supplemental charter fiasco of the same year; the coquetting of Lord Mayo with the bishops in 1867; Mr. Gladstone's great effort in 1873; the establishment of the Royal University in 1879; Mr. Balfour's remarkable statement in Parliament, and his subsequent famous speech at Partick in December, 1889; and, though last not least, the recent debate in Parliament, in which the junior member for Dublin University declares, apparently authoritatively, his willingness to support the establishment and endowment of a Catholic University, followed by the impressive and suggestive words ofMr. Morley, who always means what he says, "I am rejoiced to hear that statement." I quote the words from a report of the Parliamentary debate which took place on the University Clauses of the Home Rule Bill, and which appeared in one of our daily papers of the 19th of August.

How many more chapters will have to be written before the end is reached? We cannot, however, but regard the present time as one, perhaps, more favourable for a settlement than any other period in the history of the demand. The Tory party is not likely to act in opposition to their leaders; the Irish party is pledged to demand and secure a settlement of the question; and the Trinity College party is, too, anxious that an university should be established and endowed to meet the requirements of the Catholics of Ireland.

THE UNIVERSITY OF DUBLIN; ITS ATTITUDE.

It is remarkable how keen is the instinct of self-preservation amongst those who are responsible for the *bien-être* of the University of Dublin. Proud, as all Irishmen must be, of her prestige, of the illustrious men, our brothers, whom she has trained, we cannot but lament the narrow-minded policy which

led her to shut out from her halls the Catholic youth of Ireland because it was Catholic. We cannot forget that it took nearly three centuries before the University of Dublin realised the necessity of throwing open her great prizes, scholarships, fellowships, &c., to others than those belonging to the Established Church in Ireland, and even at this late hour of the day it is a matter of debate as to whether the step was taken as an act of liberality and fair play, or as one of expediency. But a few years before, a remarkable proposal emanated from the pen of Dr. Lloyd, the Provost of Trinity College,—namely, that denominational colleges, including a Catholic University College, should be established in Dublin, entrusted with the moral and disciplinary care of university students of the various denominations, while Trinity College should continue to discharge the same duty towards Protestants, but that the teaching, as well as examination, should be common to all, and should be conducted by the University, of which the present University of Dublin should be the nucleus.

Many will think that this proposal, just and broad-minded, evincing a desire to regard the youth of Ireland as a whole, not as consisting of several distinct species, one of which was specially to be looked on as alien and inferior, would have settled this burning question to the advantage, not alone of the intellectual life, but also of the material prosperity of the country. But, as if Provost Lloyd had calculated without his host, the proposal was never seriously pressed, and Mr. Fawcett's motion to throw open Trinity College to persons of all religious denominations was carried with the acquiescence of the university authorities. Just now a great political change is in the air, and again University Education attracts the attention of Trinity College. This time the question is formally brought forward in an able and temperate address read before the College Historical Society, the burden of which was to give to the Roman Catholics an university for themselves. Of course, so striking a pronouncement could scarcely be regarded as otherwise than authoritative, but if there were any doubts as to this, the discussion which followed the reading of the address completely dispels it. It is not likely that Judge Webb (until lately the distinguished public orator of the university), Professor Mahaffy, and Lord Justice FitzGibbon, would give expression to any views upon university reform

without the knowledge and approbation of the Governing Body of their *Alma Mater*. There is, indeed, a consensus of opinion amongst the different speakers at once remarkable and suggestive. Judge Webb made, as he always does, an able and eloquent speech. It was marred, perhaps, by some traces of inconsistency. He claimed for the university that it was in no sense a sectarian or exclusive institution, but he proceeded to demonstrate its liberality and non-sectarianism in the following words:—"The university was founded by Protestants for Protestants, and in the Protestant interest. A Protestant spirit had from the first animated every member of its body corporate. At the present moment . . . the *genius loci*, the guardian spirit of the place, was Protestant, and, as a Protestant, he said, and he said it boldly, Protestant ought it evermore remain." What strange evidence of the non-sectarian character of the university! Lord Justice FitzGibbon was, as he always is, just to others. He, too, agreed in the auditor's views as to the wisdom of establishing a Catholic university, but in one short sentence he may be said to have struck the key-note of the position always maintained by Trinity College. "He," said Lord Justice FitzGibbon, "claimed that the first principle to be insisted upon in any attempt to solve the problem of university education in Ireland, was to boldly proclaim that there shall be hands off as far as the university was concerned."

This declaration is, at all events, a courageous avowal of the policy of the University. Parliament may disestablish a State Church, it may revolutionise conditions of land tenure, it may enact any law it chooses affecting the relations of labour and capital, but the one institution that is to be held sacred from all disturbing influences, so as to be allowed to enjoy its serene and peaceful career of academic repose, is the University of Dublin. Any opinion which I venture to express upon this burning question of University education, I need scarcely say, is a purely irresponsible one. It represents only my own individual view, and cannot, therefore, be taken with the weight of authority attached to it. If at any future time the question of University education comes to be dealt with by the country which is specially concerned in it, and if any attempt be made to consolidate our university system, I cannot see how any institution can be maintained which does not minister to the educational wants of the community at large, not merely to those of a class.

The idea which is so carefully disseminated, that popularising an institution is synonymous with its destruction, is one of those popular fictions which from endless reiteration comes to be accepted almost without question, even by those who see the necessity for reform. For my part, I have a sufficient confidence in the judgment and wisdom of my countrymen to believe that in effecting any great or radical changes in our educational system, such changes will be made as will be favourable for the development of our intellectual and material resources.

THE OBLIGATIONS OF THE SCHOOL OF MEDICINE.

But, whether the settlement of the University question be within measurable distance, or, comet-like, is about to enter on its stage of periodical disappearance, our mission is a clear and definite one. It should not be merely limited to preparing students for the various medical examinations, it should be educational in respect of its teachers, it should represent the advances which are made in scientific medicine, it should itself take no slight part in the work of research and patient investigation. There are elements here in this city which should foster the growth of a vigorous and flourishing medical school; there is the healthy stimulus of rivalry, sufficient to quicken our energies without being likely to be in any way destructive; there is too, and I am glad to publicly acknowledge it, a friendly spirit shown by the scientific and other teachers of the University School of Medicine towards this school, a readiness to aid where aid is required, and a generous appreciation of work done, given with that ungrudging spirit which is the characteristic of earnest and thoughtful workers. Men like the Professors of Anatomy, Physiology, and Chemistry in the School of Physic, exercise a healthful influence over the teachers in other schools, and I sincerely hope we shall never be without a healthful measure of fair and vigorous rivalry, such as at present exists.

REFORMS NECESSARY FOR THE PROGRESS OF THE DUBLIN SCHOOL.

But if we are to hold our own with neighbouring and Continental schools we must make some combined effort—an effort made without distinction of creed or of political thought—to bring the Irish school of medicine up to the level of those of our neighbours and within measurable distance of the great Conti-

nental schools. Let us not live in a fool's paradise ? We can, perhaps, claim that we have maintained the standard of clinical teaching fully up to that attained in the time of Corrigan, Graves, Stokes, and Smith; but, in all truth, must we not admit that the scientific work done at home is not either in quantity or quality worthy of the best traditions of the Irish school? We cannot afford to overlook the fact that, owing to various causes, the number of students which appears in the "Irish Medical Register" has steadily and progressively diminished within the past ten years. In 1880 there were 536 students registered in Ireland, representing under the four years' curriculum over 2,100; in 1890 the number of registered students was 229, representing a class considerably under 1,000, thus showing in the decade a falling off of more than one half.

Has the delay in carrying out measures of reform in regard to teaching some connection with this startling decline? In 1883 an attempt was made to reform our Dublin hospitals so as to make them more suitable than they are at present for the purposes of teaching as well as to secure an equitable distribution of the grant given by Parliament for the maintenance of these institutions. A Commission of Inquiry was appointed, important evidence was collected, and a report of great value, eminently fair and just in its suggestions, was duly presented. But, like the case of many other grievances, the matter has not proceeded further than the Commission of Inquiry and Report stage.

Some two years ago, when President of the Pathological Section of the Royal Academy of Medicine, I ventured to suggest that steps should be taken to put the teaching of pathology in Dublin on a more satisfactory basis than that which at present exists. The scheme of reform proposed may or may not be practicable; but, although teachers upon whose mature judgment I would place implicit reliance thought that it or some similar measure ought to be carried out, no movement has as yet been set on foot to take the matter into formal consideration.

In England the Colleges of Physicians and Surgeons have combined to establish a research laboratory, situated on the Thames embankment, under the direction of Dr. Woodhead, complete in every detail, and available for any member of the profession desirous of making original investigations.

A British Institute of Preventive Medicine is being established

in London upon the same lines as the Pasteur Institute in Paris, and that recently built by the German Government for Professor Koch. In the Institute will be made researches in connection with infectious diseases occurring in man and animals, and the modes of their prevention, and here also will be undertaken the providing of material for inoculation against such diseases as tubercle, hydrophobia, anthrax, quarter evil, cholera, &c., so that those who are interested in this special line of study will no longer have to go to Berlin, to Munich, to Breslau, or to the Pasteur Institute in Paris, to learn the methods of research employed. The Institute is being founded by public subscription, and already a sum of over £56,000 has been obtained.

How long must we wait before we have a research laboratory and an Institute of Preventive Medicine at home?

A SCHOOL OF VETERINARY MEDICINE NEEDED.

Let me mention one other matter as an illustration of our apathy in developing resources at our hand.

A short time ago I received a letter from His Grace the Archbishop asking me if it would be possible, in the interest of Irish students, to establish a veterinary school in Dublin, and if it could be organised in connection with this school. No proposition could, I think, bring home to us more vividly our want of enterprise and progress. An almost exclusively agricultural country, with an unrivalled prestige in the breeding of horses, depending for a large portion of its wealth upon animal produce of various kinds, having yearly those great shows which' under the fostering care of the Royal Dublin Society, have made Ireland conspicuous, I may say, throughout Europe, is without a school for the education of its veterinary students, who are obliged to seek in London, Edinburgh, or Glasgow the education for which no provision is made at home. Since I received the Archbishop's letter, I visited the Veterinary School in Brussels, and the Royal College of Veterinary Medicine in London, and both institutions appear to be perfectly organised. Through the kindness of Professor Shave, the Lecturer on Anatomy in the London College, I had an opportunity of inspecting both school and hospital, and noting all the facilities which were afforded to the student for the study of diseases affecting horses, cattle, and domesticated animals generally.

In addition to the School in London, there are two veterinary schools in Edinburgh, and one in Glasgow.

It would be impossible for us here, for many reasons, to organise or take up the subject of veterinary medicine. We have our hands quite full, and our resources are, unfortunately, as I think I have shown, strictly limited. I may, however, point out that the idea of the Archbishop, of having veterinary medicine taught in connection with a school of human medicine, has the sanction of high authority. The celebrated anatomist, Vic d'Azir, most strongly urged that veterinary medicine should be made a preliminary course to the study of human medicine, and that a veterinary school should be annexed to every medical college in France. This view was very strongly supported by Tallyrand, who read a paper on the subject before the National Assembly in 1790 urging its adoption. Bearing in mind the number of diseases that are communicable from animals to man, and the great advantage to be gained by the study of comparative pathology, there can be little doubt but that the establishment of a veterinary school in Dublin would have a healthy influence upon our medical school, and I hope that this aspect of the question may not be lost sight of by the profession generally. I am sufficiently sanguine to hope that now that this matter has been brought prominently under public notice, some good result may be obtained. The Vice-Chairman of the Agricultural Committee of the Royal Dublin Society, Mr. James Talbot Power, one of those who

"Do good by stealth and blush to find it fame,"

has taken up the matter warmly. The O'Conor Don, the Right Hon. C. T. Redington, Mr. C. J. Blake, the well-known sportsman, and others who take a keen interest in the breeding of horses at home, are fully alive to its importance and have promised to aid the movement, so that some good result may follow from the initiative taken by the Chancellor of our University.

Gentlemen, everything in this world comes to an end, even an introductory address. I have detained you already at an inordinate length, and I hesitate to trespass further upon your patience. But I desire to add a word or two as a sequence to what I have brought before you. We live in a period of history when political feeling runs high, and different sections of Irish-

men are arrayed in fierce conflict with each other. It may not be too sanguine to hope that time, as it travels in its divers paces, may bring to us that unity which is essential for our mental, social, and material progress. Meanwhile, let us bear in mind that science knows no politics, that we as students of medicine are concerned only with what, next to religion, exacts all that is best and noblest in our nature—the care of the intellectual and physical well-being of man. If we are in earnest, the study of medicine, or even of one of the different branches of knowledge which it embraces, will guard us against a danger which is so fruitful a source of evil of every form—intellectual *ennui*. But to acquire that degree of interest in work which renders a life of labour the only one that is the source of happiness in this life, with the joyous sense of independence which reliance on oneself engenders, the work that is accomplished must be in the strictest sense *thorough*. Medicine is a hard taskmaster. Those who desire to have their names written on the pages of its history must devote themselves exclusively to its study, and carefully shut out all else that would be likely to divert their attention from that which should engross it to the fullest extent.

> "One science only will one genius fit,
> So vast is art, so narrow human wit."

ART. XV.—*Pernicious Anæmia.*[a] By JAMES CRAIG, M.D. Univ. Dublin; F.R.C.P.I.; Physician to the Meath Hospital.

A CASE has recently come under my observation in the Meath Hospital, presenting in such a marked degree the clinical features which characterise pernicious anæmia, that I have come to regard it as an example of that obscure and rather rare disease. While hunting up the literature of the subject in my endeavour to become acquainted with the most recent views as to its causation and pathology, I was surprised to find that on two occasions only communications on this disease had been brought before the Fellows and Members of this Academy of Medicine. One was made by Dr. Finny in 1884, and the second by Dr. W. R. Graves in 1889, the latter merely embracing a few pathological results which he had observed. Previous to that the Irish literature dealing with

[a] Read before the Section of Medicine in the Royal Academy of Medicine in Ireland, on Friday, November 17, 1893.

this affection was confined, as far as I can gather, to a very able paper by Dr. Purser, published in the *Dublin Journal of Medical Science* for 1877, and a lengthy and exhaustive lecture delivered by Dr. Finny in the City of Dublin Hospital, and published in the *British Medical Journal* of 1880.

If this case which you have had the opportunity of examining were one of every day occurrence, I should have preferred to wait before making my communication until either a more satisfactory result of treatment could have been recorded, or, in the event of a fatal termination, definite pathological results described. But as neither of these conditions is likely soon to be fulfilled, I thought the present occasion not an inopportune one for a discussion of the subject. And in reading this paper I must ask for your kind forbearance if I weary you with a minuteness of detail which would be superfluous in the case of a less obscure illness:—

CASE.—W. W., forty-two years of age, residing in Dublin, an upholsterer by trade, was sent to me by his employer on the 5th of September last. He complained that he lost his breath while walking, got weak and faintish while at work, and giddy when he raised his head after stooping. Family history excellent, has been married for 22 years, and has eight children alive. Had scarlatina when a boy, and typhus fever 11 years ago. Was never abroad. Had a bubo 15 years ago which did not suppurate, and was not accompanied by rash or sore throat. Never suffered from jaundice, nor passed tape-worm. Has suffered from piles with occasional hæmorrhage for the last 18 years. About 6 years ago was much troubled with pain in the stomach and flatulence, which were relieved by the daily use of essence of ginger.

Some four years ago he first began to get breathless when walking on the street, and at that time he obtained admission to Steevens' Hospital, where he remained under treatment for several months. His symptoms having subsided, he went from there to the Convalescent Home at Stillorgan, from which place he returned to his work feeling stronger and in better health. This improvement continued for about 12 months, when the breathlessness returned, and his skin became "pale and yellowish." He attended a dispensary in Mark-street off and on during the next 18 months, until in the February of the present year he became a patient in the Whitworth Hospital, Drumcondra. While there he improved somewhat, and again went to the Convalescent Home, but on resuming work he soon began to suffer as previously from weakness and shortness of breath. These increased until he came into the Meath Hospital in September. He has never had epistaxis; has suffered for some years from occasional attacks of diarrhœa, but not from vomiting. About 7 months

ago, once or twice a week, he became very hot at night and perspired freely. Three months ago he says his mouth was covered with white blisters. About a year ago he noticed his urine was darker than at present.

On admission his face was of a pale lemon colour; the skin dry, smooth, and waxy; areola around nipple not dark; no enlargement of glands. Mucous membrane of lips and gums very pale; finger-nails excessively white; veins on backs of hands of magenta tint; conjunctiva of a bluish white colour. Body well nourished and covered with an abundance of subcutaneous fat; no œdema; respirations 24 per min.; no cough; lungs healthy. Heart is of normal size; a hæmic murmur is audible at apex, and more distinct over pulmonary area; a loud venous hum is heard over vessels in right side of neck; pulse 96, weak and compressible. The tongue is very pale, smooth, moist, and flabby, but clean; appetite is bad; diarrhœa is present; fæces dark with offensive smell; flatulence troublesome; abdomen tympanitic; no tumour. Splenic dulness slightly increased; liver normal in size; urine normal in amount and colour, sp. gr. 1019, acid with no albumen. Temperature normal, sees well, sleeps well, but is very apathetic and answers questions slowly.

A diagnosis was not arrived at as to the cause of the anæmia, although phthisis and malignant disease were excluded, and he was ordered 4 m. doses of liq. arsenicalis, and ½ drachm doses of aromatic iron mixture to be taken thrice daily. The diarrhœa, which lasted for two days, was stopped by lead and opium pills. His breathlessness became less, and he was sent for a fortnight to the Convalescent Home in Bray, his medicine being still continued. On the 17th Oct. he returned to hospital and complained that he had gone back in his improvement, and was now as breathless as on his first admission. A diagnosis of pernicious anæmia was suggested, and accordingly an examination was made of a drop of blood drawn from his finger. It was pale and thin, and did not clot. The microscope revealed no excess of leucocytes, but the red corpuscles were few, and were either lying singly or collected in clusters. Some were normal in shape and size, but the majority were smaller than normal, and of great varieties of shape. Some were larger and paler than in health. The red cells were then counted by the hæmocytometer of Gowers, and numbered 1,700,000 instead of 5 millions to the cubic millimetre, or 34 per cent. of the normal. The amount of hæmoglobin was also determined, and was only 18 per cent. of that in health. He was put on 25m. of liq. arsenicalis daily, and his diet was restricted to 3 pints of milk daily with an egg each morning, and rice twice daily.

The blood was again examined on Nov. 4th, and the corpuscles had increased to 2,280,000 per c.mm., or 45 per cent. of the normal number.

A further examination was made on Monday last, the 13th Nov., and

although the alterations in shape were not so marked as when first examined, the red corpuscles were only 2,000,000 to the c.mm., or 40 per cent. of the normal, and the hæmoglobin was still only 20 per cent. of that found in health. There was no tenderness on tapping over the sternum or long bones.

As the presence of piles, which were said to bleed occasionally, pointed to a probable cause of the anæmia, I asked Sir William Stokes to make a rectal examination of the patient, which he kindly did, with the result that three small sessile piles, about the size of red currants, were found an inch or more above the anus, and although these did not themselves bleed, the passage of the speculum caused slight oozing from the relaxed mucous membrane below them. The urine was collected on several occasions and averaged between 50 and 60 ozs. I have to thank Dr. Lapper for a careful analysis which he has made of the total amount passed during 36 hours on Nov. 4th and 5th. He found the urine of normal colour, very acid, sp. gr. 1019. Urea amounted to 1·1 per cent., or 301 grs. per diem. The total sulphuric acid passed daily as sulphates was 30·73 grains, of which 14·35 grains were in the form of inorganic sulphates, and 16·38 grains were united with indol, phenol, and skatol, and appeared as aromatic sulphates.

These aromatic sulphates amount normally to about 4 grains daily, and are only one-tenth of the amount of inorganic sulphates, whereas you will observe in this case Dr. Lapper has found their amount to exceed that of the inorganic sulphates, the proportion being gr. 1 inorganic, to 1·14 grs. aromatic. It was therefore evident that indigogen compounds were present in abundance, and the specimen of indigo blue which I hand round was obtained from 3 ozs. of urine by adding an equal quantity of pure HCl, and then carefully adding a few drops of a hypochlorite of calcium solution, and finally shaking up with chloroform and evaporating. Iron was not present. Urobilin could not be detected to any very appreciable extent, and ptomaïnes were not examined for.

The temperature has been taken daily since his return to hospital, and although it never reaches 98° F. in the morning, it rises to 99° F. each evening, and on two occasions to 100° F. Since his re-admission he has only once complained of looseness of the bowels, and on examining the fæces they were semi-fluid, alkaline, and slightly darker than normal, but not markedly offensive and without a trace of blood.

His eyes were examined, but being unable to detect any retinal

hæmorrhages, Dr. Story very kindly undertook a careful examination for me, and he found that the retinal vessels were very pale, but that no evidence of hæmorrhages existed.

I cannot say that up to the present there has been any great improvement in the condition of the patient, although arsenic has been administered very freely. He says that he is not so breathless as before when he walks up and down the ward, and although I have lately noticed a tendency to a tinge of pink near the free margins of the nails, an examination of the blood has not revealed any increase of red corpuscles or hæmoglobin to account for this. Dr. S. M'Kenzie has pointed out that a universal pallor of the nails is an evidence that the corpuscular richness of the blood has decreased by 50 per cent.

In my further remarks you will have an opportunity of observing in what respects the clinical features of this case correspond to the recognised symptoms of the disease which I have assumed this to be, and in what instances they differ.

The obscure malady to which the name of Pernicious Anæmia has been ascribed has occupied for the last quarter of a century a considerable amount of attention from the medical profession both in the United Kingdom and on the Continent. True that a few scattered cases had been published before 1855, but at that date Addison first made known the fact that he had long been aware of a fatal form of anæmia, which came on slowly, resisted all treatment, and for which no cause could be assigned. He termed it Idiopathic Anæmia, and when, 16 years later, Biermer, of Zurich, published what he thought was a new disease, he called it Progressive Pernicious Anæmia, but it was in reality the same complaint which Addison had already described; and a number of which like cases had been under the care of him and his colleagues in Guy's Hospital in the intervening years. This claim of priority for the German physician in describing a new disease—a claim to which he had no just right—has caused as much annoyance to the colleagues and successors of Addison as was caused in our own country when the Germans gave to Basedow the honour of having first discovered the disease which, five years previously, had been described by Graves, and with which his name will be for ever linked.

But while the honour of discovery undoubtedly rests with Addison, the title of Idiopathic Anæmia with which he named this malady, has come to be regarded in a wider sense, and to include both chlorosis and pernicious anæmia, which are considered as

primary ailments as distinct from those anæmic conditions which are simply symptomatic. The title of "Progressive Pernicious Anæmia" adopted by Biermer is now shortened to Pernicious Anæmia, as it has been found that the disease does not in all cases assume a progressive nature, but is often characterised by relapses and sometimes even by cure.

The symptoms indicative of this disease are numerous, and in most cases the illness creeps on the patient in a slow and insidious manner. Distressing breathlessness may be the only thing complained of for a length of time, but increasing weakness, pallor of the skin and mucous membranes, and in the case of the face a yellow, lemon, or faded leaf-tint, are soon noticed. The superficial veins on the backs of the hands have been observed by M'Phedran, of Toronto, to have a magenta tinge rather than the normal blue. While general weakness increases there is no wasting to correspond, but rather an increase in the amount of subcutaneous fat, which, however, may disappear towards a fatal termination. Stomatitis, vomiting, and diarrhœa are usually present, one or other or sometimes all of them being prominent, and in the case of the diarrhœa it is often of an unusually offensive character. The tongue is pale, flabby, and clean, but at times coated or raw-looking. The appetite is bad, and flatulence, with pain in the epigastrium, is present. Hepatic dulness is slightly increased. The lungs are healthy. The heart is often slightly enlarged from fatty degeneration and probably dilatation—hæmic murmurs at apex and base are common, with a venous bruit in the neck. The pulse is quick and compressible, though sometimes high tension has been noted. Hæmorrhages into the retinæ are invariably present, while epistaxis, bleeding from the gums, metrorrhagia, and even petechiæ, are not uncommon. Œdema around the ankles has been noticed. Tenderness over some of the bones has been observed.

In 1874 Professor Immermann, of Bâle, observed that pyrexia without local inflammation was an important character of "the new disease," and in the same year a case of Dr. Moxon's is recorded in "Guy's Hospital Reports" (1878), in which rigors, sweating, and high temperature occurred. Further investigations have proved that this pyrexia, rarely absent, is irregular or remittent in its course, and indeed it has been taken by Dr. Wm. Hunter as a sign that active destruction of blood is going on when the temperature rises, and he says that at such times also there is a deeper tint of the skin and a darker colour of the urine.

However, although irregular fever is common and well-marked in pernicious anæmia, we should remember that pyrexia has been observed in anæmia from excessive hæmorrhage, and commonly, to a slight degree also, in chlorosis.

In 1875 changes were discovered in the medulla of the long bones, to which I shall refer later on.

A microscopic examination of the blood was made by Wilks and others in Guy's Hospital even in the earliest-recorded cases, but save that the leucocytes were not increased, little else was observed. Leared, it is true, wrote in 1858 that the blood discs varied in size and shape. However, it was not until 1875 that Dr. Byrom Bramwell made drawings of the appearances presented by the blood when examined with the microscope, and these drawings were published two years later in the *Edinburgh Medical Journal.* In the meantime Professor Eichhorst, of Jena, had independently discovered the remarkable changes which are seen in the red corpuscles, and Quincke gave a translation of his description in the *Medical Times and Gazette* of Oct., 1876. In the following month Messrs. Mackern and Davy demonstrated similar changes from the blood of a patient in Guy's Hospital, and nine months later Professor Purser was fortunate enough to meet with a case in which the corpuscular characters of the blood were most minutely observed and recorded by him. Dr. Stephen Mackenzie, in the *British Medical Journal* of 1891, after mentioning that in this disease the sp. gr. of the blood is reduced from 1050 to 1038 or 1028, that its alkalinity is lessened, and that the solids of the plasma are greatly diminished, classifies the alterations that have been noted in the red corpuscles under six heads—1. Their cohesiveness is modified, so that rouleaux are seldom seen, and the corpuscles are either arranged singly or collected in clusters. 2. They are greatly reduced in number; instead of averaging 5,000,000 to the cubic millimetre, their number may fall to 1½ millions, or sometimes, even before death, to 360,000. 3. Poikilocytosis, or alterations in the shape of the corpuscles, though found occasionally in chlorosis and other anæmic affections, and though sometimes absent in this disease, is very marked. Some of the cells are the normal biconcave discs, but the majority are ovoid, pear-shaped, battledore, rod-shaped, cup-shaped, or, finally, of irregular outline. 4. Their size presents great variations; large numbers of small cells are seen—microcytes, and this condition, though present in all varieties of anæmia, is more common in

pernicious than in the other forms. On the other hand, megalocytes, or cells larger than the ordinary ones, are especially characteristic of this disease. Nucleated red corpuscles have also been occasionally observed. 5. The vulnerability of the corpuscles is increased—in other words, they more readily give up their hæmoglobin. This is proved by observing with the microscope the colouring matter separating from the stroma, and by noting that in a few hours crystals of hæmoglobin form in a drop of blood placed on a slide without any reagent being added, as shown by Copeman, but this latter condition was not found by Mott. 6. The hæmoglobin capacity of the red corpuscles is greatly increased. This, I do not think, has been sufficiently verified from the recorded cases, to entitle it to be given as a definite statement. Numerous instances are doubtless recorded where the percentage of corpuscles had fallen to 30 or 40, while the hæmoglobin was still present to 60 or 80 per cent. In these cases the corpuscles represented twice their normal value, but also in a great number of cases the value of the coloured cells had only been one-half of the proper amount, and this latter condition is what my patient's blood reprsents. However, when a comparison is made with chlorosis in this respect, a marked difference exists. In chlorosis a great deficiency in hæmoglobin out of all proportion to the number of cells, which, indeed, may be only slightly decreased, is a special characteristic of the disease, while in pernicious anæmia the hæmoglobin bears a more equal relation to the number of cells, and is often greater individually than in health.

In addition to the characters of the blood just enumerated, one observes, from a drop on the finger, its pallor, thinness, and tendency to run off the finger rather than to clot.

With regard to the urine, it has been found normal in amount, of low sp. gr., acid in reaction, deficient in urea, and generally free from albumen, bile, and sugar. In many cases its colour is of the usual amber tint; in others it has been found darker than that of health. But of late years much importance has been attached to the discovery of the following additional characters—namely, excess of iron, increased and abnormal urine pigments, blood pigment, increase of the aromatic sulphates, and finally the presence of ptomaïns. And these conditions I shall now briefly consider in detail, and endeavour to point out the significance attached to their presence and the causation theories adduced therefrom.

In the case recorded by Dr. Purser he had noticed that the

urine during life was darker than normal, and on finding after death that the epithelium of the convoluted tubes in the kidneys contained a granular pigment which gave an iron reaction, he greatly regretted that he had omitted to examine the urine for iron, for he concluded that the iron pigment present in the kidneys was derived from the blood, that it was undergoing elimination through the renal convoluted tubes, and thus darkened the urine by its presence. This suggestion was subsequently acted on by Dr. Finny, and it was found that one of his patients, while not under treatment by iron, had eliminated about one-third of a grain of this metal in 72 ounces of urine. This, of course, pointed to an active blood destruction, but by taking into consideration the altered appearance of the red corpuscles, and from the definite changes which had been observed by Cohnheim and himself in the medulla of the long bone—a change in which the yellow fat was replaced by a variety of coloured and colourless corpuscles—Dr. Purser arrived at the conclusion that probably an imperfect formation, and almost certainly an increased destruction of the red corpuscles, takes place in the bone-marrow. Professor Pepper, of the University of Pennsylvania, had first observed the abnormal appearance of the bone-marrow, and had put forward the theory that pernicious anæmia was merely a medullary form of Hodgkin's disease.

However, an advance towards a fresh theory was made when Dr. Wm. Hunter, acting on the discovery that in many cases the liver-cells of the portal area were deeply stained by iron re-agents, made a quantitative estimate of the amount of free iron contained in the liver and spleen. The normal amount he found to be ·083 per cent. in the liver, and ·171 per cent. in the spleen after these organs had been freed from blood. On the other hand, in pernicious anæmia he found that the liver contained more than seven times as much as in health, while the normal quantity was scarcely reached in the case of the spleen. In other words, the liver, which in health yielded only one half of the amount obtained from the spleen, contained three times the splenic amount in the disease under discussion. Dr. Hunter, therefore, concluded that an active destruction of blood was going on in the body, and that the liver was the chief seat of this hæmolysis. But when the pigments found in the urine came to be analysed and traced to their origin, fresh difficulties arose. It was then seen that the dark colour of the urine was not due to the presence of iron but to *pig-*

ments which were free of this metal. The colouring matter of urine in health was shown to be urobilin, which M'Munn believes is produced by the action of nascent hydrogen on hæmatin in the tissues, and not, as is more commonly supposed, derived from the reduction of bile pigments in the intestines. However, the urine in pernicious anæmia owes its deeper colour, according to M'Munn, to pathological urobilin which is of a darker colour than the normal variety, and this pigment he considers to be derived from stercobilin in the following manner. Bilirubin and biliverdin are formed in the liver from effete hæmoglobin, and pass on as constituents of the bile into the intestines. The hæmoglobin and histo-hæmatin of the meat taken as food also find their way to the intestines, and they along with the bilirubin and biliverdin come under the influence of the putrefactive ferments of the intestinal canal, with the result that stercobilin is formed from them, and, probably at the same time, ptomaïns are also formed by the action of these putrefactive ferments on the proteids. Part, then, of the stercobilin may pass on with the fæces, but part is also taken up by the portal capillaries of the intestines, and after undergoing reduction changes, is finally excreted as pathological urobilin. The ptomaïns are probably also absorbed at the same time as the stercobilin, and being present in the blood, are excreted by the kidneys, and their presence has been demonstrated in the urine.

Now this abnormal urinary pigment together with the ptomaïns would accordingly point to an excessive putrefaction in the intestines, and that such is the case Hunter endeavoured to prove in a different way. He turned his attention to the excretion of sulphates. In health the sulphates taken with food appear in the urine as inorganic sulphates of sodium and potassium, but during the pancreatic digestion of proteids, if this be prolonged, decomposition sets in owing to the presence of organised ferments, and the aromatic substances, indol, phenol, and skatol are formed. The skatol mainly passes on with the fæces and is the chief cause of their fæcal odour, but the indol and phenol unite with the sulphur set free from the proteids, and, combining also with potassium, they form potassium indoxyl sulphate (the so-called indican of the urine) and potassium phenyl sulphate, and these are excreted in the urine as aromatic sulphates. Hence, in health there are two forms of sulphates passed in the urine—inorganic and aromatic. Now the total daily excretion of all the sulphates when determined by the quantity of sulphuric acid passed, amounts to

some 44 grains in health, 4 grains being aromatic, and 40 grains being inorganic compounds, or a proportion of 1 aromatic to 10 inorganic. But if putrefaction in the intestines exceeds the normal, the aromatic principles derived from indol and phenol will be increased in the urine but not the inorganic, which, indeed, will be lessened owing to the diminished consumption of food. In pernicious anæmia Hunter found this variation to be the case. While the entire sulphates were diminished, he found on one occasion that the relation, instead of being 1 to 10, was 1 of aromatic to 3 of inorganic; and as further proof of this, Dr. Lapper has shown that in the case of this patient of mine the aromatic sulphates even exceeded the inorganic in amount. This, at all events, proved that an excessive putrefaction was going on in the intestines, but the slight difference in the relation of these principles when taken as an index of the amount of putrefaction, did not satisfy Hunter. He did not consider that the amount of putrefaction present would represent enough putrefactive products to account for the active destruction of blood which the excess of iron and pigment found in the urine represented. Accordingly he turned his attention to a search for ptomaïns in the urine, and he succeeded in demonstrating not only the presence of putrescin and cadaverin, which are the normal products of putrefying meat and which are not poisonous, but in addition to these he discovered the presence of an unknown ptomaïn, which he considers may be of a poisonous nature, and from this he concluded that in addition to the ordinary ferments of putrefaction in the intestines, there are also *special* micro-organisms present in this disease, which by their action produce ptomaïns of a poisonous nature, and that these in their turn act indirectly as destructive agents on the blood. I have already stated that he felt assurred this active destruction of blood took place in the liver on account of the abnormal amount of iron which it contained after death, but on this point he subsequently corrected himself by very patient experiments.

He first proved that in health the daily destruction of blood is accomplished by the activity of the white corpuscles, but more especially by the activity of the lymphoid cells of the spleen, and to a less degree by the activity of the lymphoid tissue which surrounds the capillaries in the gastro-intestinal mucous membrane. He then distinguished between a direct and an indirect destruction of corpuscles; by injecting pyrogallic acid into the blood the cells were directly injured and gave up their hæmoglobin which appeared

immediately in the urine as hæmoglobinuria. This direct action was not present in pernicious anæmia, but by the injection of toluylene-diamine in animals, he was able to bring about a condition similar to what is found in this disease, and the effects of this drug were of an *indirect* nature, increasing, as he supposed, the normal activity of the lymphoid cells of the spleen and gastro-intestinal mucosa—in other words, that an exaggeration of the normal process of blood destruction had taken place under the influence of toluylene-diamine. In such an indirect way, also, does he consider the poisonous ptomaïns to act in pernicious anæmia, so that this disease would be of a toxæmic character, and he now regards the function performed by the liver to be of a merely excretory nature; and by means of it and of the kidneys the effete hæmoglobin is partly stored up in their cells in the form of iron, and partly eliminated as iron and pigment in the urine. In order to give a fuller picture of Hunter's teaching I should add that he considers the presence of worms, catarrh, ulceration, &c., in the intestines as predisposing elements to the favourable growth of the special micro-organisms to which the poisonous ptomaïns owe their origin. And he considers that these toxic ptomaïns are absorbed in an irregular manner, and that when an excessive absorption takes place symptoms of toxæmia appear, accompanied by evidences of an increased destruction of blood. The evidences of toxic poisoning are those of rigors, sweating, high temperature, prostration, drowsiness, and even delirium and coma. The evidences of blood destruction are the deeper tint of skin, the darker colour of the urine, and a diminution in the number of blood corpuscles. In order to prove whether these toxic symptoms were of common occurrence, Dr. Hale White has examined the records of 30 cases which were treated in Guy's Hospital, and although in some of these delirium and coma preceded death, in only one instance was there a record of sudden onset of fever, with rigors, sweating, and drowsiness, so that Dr. White is of opinion that, on the whole, the evidence of toxæmia is slight.

And with regard to the colour of the urine, Dr. Stephen Mackenzie and Dr. Hale White have each concluded that, although the urine is frequently high coloured, in many cases it is not so.

Having explained the views of Pepper, Purser, and Hunter as to the nature of this disease, I shall now relate the views which others have expressed.

Addison and the early writers on the subject believed fatty degeneration of the heart to be the cause of the malady, and this was rather an effect than a cause.

Fenwick, from finding an atrophied condition of the gastric glands, based on that a causation theory, but intestinal lesions have been so seldom found that much value cannot be attached to them.

Pye-Smith, in 1882, says it depends on a too rapid and extensive destruction of the red blood corpuscles. Delépine and Mott would look on it as a disturbance of one of the normal functions of the liver—a function which may be compared to its glycogenic function—and a disturbance of which produces increased hæmolysis, just as a disturbance of the glycogenic function produces glycosuria. Mott further suggests that this perverted action on the part of the liver may be due to the absorption of some substance from the alimentary canal. Peptone, for instance, if not changed when absorbed, might give rise to increased hæmolysis, or chemical products of putrefaction might cause it. However, with the marrow changes in his mind, he finally sums up by expressing his conclusions as follow: that an excessive hæmolytic process of a progressive and remittent character occurs for no proven or ascertainable reason, leading to an attempt on the part of the blood-forming tissues to repair this excessive waste, and often eventually determining a reversion to the embryonic type of blood-formation in the marrow and spleen.

Hunter, whose views are more recent, has shown that the hæmolysis does not take place in the liver, but in the spleen and gastro-intestinal mucous membrane.

Before speaking of treatment I should like to point out that, in favour of my diagnosis in the present case, there are—the very grave anæmia, without evident cause, the changes in the red corpuscles of the blood, the improvements and relapses, extending over a period of four years, the excessive breathlessness and weakness, without pulmonary complication or dropsy, and with a large amount of subcutaneous fat, the slight exacerbations of pyrexia and cardiac murmurs, loudest over the pulmonary area, and of varying intensity; while, as opposed to this diagnosis, there are—the absence of retinal hæmorrhages (which, it is true, are not universally present in pernicious anæmia), the absence of iron and urobilin in the urine, and the presence of cardiac murmurs, which might be taken to represent valvular disease of the heart. Now, with regard to the urine, although iron is generally admitted to

be present, it is not so with urobilin. In Byrom Bramwell's eight cases the urine was either very pale or normal, and the search for urobilin has been limited to recent cases. In this case the urine was darker a year ago, and at the time of analysis arsenic had been administered for nearly two months. In considering the question of a cardiac lesion, even if the murmur was granted to be of valvular origin, the fatty degeneration and dilatation of the heart arising from the anæmia would account for it: and although I am fully aware of the extreme anæmia which often accompanies cardiac lesions in children, I do not think the extreme degree which is present in this case is ever found in adults— at all events without other signs to confirm it.

I now pass on to the treatment of this disease. Dr. Stephen Mackenzie, in his Lettsomian Lectures on Anæmia delivered in 1891, says: "The position to-day is but little altered since Addison said of it, that, with scarcely a single exception, it was followed after a variable period by the same fatal result."

Undoubtedly many cases of recovery have been recorded, but it is too often only of a temporary nature, and it would be interesting to hear the experience of those who have followed up cases of apparent recovery during subsequent years.

The general treatment includes keeping the patient in the open air and sunshine when possible, rest, massage, and a farinaceous and milk diet. With regard to medicinal treatment, arsenic has been credited with numerous cures, but many cases remain wholly unbenefited by its use.

Dr. Byrom Bramwell and Dr. Finny, who were the first to give this drug a trial, met with more success than has since been observed from its administration. Although I have been using it for two months in the present instance, the results are disappointing, but still there is no doubt the corpuscles have become more natural in shape.

Hunter recommended beta-naphthol on account of its strong antiseptic properties. In some cases it seemed to do good. I intend to use it as soon as I am satisfied that the arsenic has had a fair trial, and from the amount of putrefaction which was shown to be present from the indican and sulphates of the urine, I should think antiseptics would prove beneficial. Dr. Duffey informs me he has used thiocamf as an antiseptic with some success in a case which is under his care at the present time. Quinine has been given during the pyrexial attacks. Phosphorus and mercury have

also been used. Oxygen inhalations have been said to improve the patient's condition. Transfusion of blood has been repeatedly tried, and with benefit, perhaps, in a few cases, but oftener it seems to have hastened the end.

Dr. Brackenridge, of Edinburgh, has recorded, in the *British Medical Journal* of July, 1892, the result of this method of treatment in some cases where arsenic had been a failure. The result encouraged him to give future cases a trial of it. He believes the cause of the disease to be a faulty blood genesis, and he hopes by transfusion to give the blood-forming organs an impetus which would bring them within the curative effect of arsenic.

ART. XIV.—*Waterlogged Dublin.* By WILLIAM R. GRAVES, L.R.C.S.I., &c.; Pathologist to the City of Dublin Hospital; Member of the British Institute of Public Health, &c.

WHILE the inhabitants of Dublin are looking this way and that for water to drink, and are even, in some instances, obliged to purchase water for this purpose, it is interesting to learn that the level of the *subsoil* water has in no way diminished,[a] and is still as high as it possibly can be, after the long and dry summer and autumn.

The Report of the Typhoid Fever Inquiry Committee, which was laid before the Dublin Corporation in August, practically places the stagnant, polluted, high level subsoil water in the front rank as a factor of typhoid fever in Dublin.

The rapid strides of sanitation in Dublin, and the improvement in both private house drains and public sewers within the last ten years, accompanied, as these improvements are, by a steady increase of the typhoid fever death-rate, make it necessary to search more closely in Dublin for the causes of this increase. Clearly it cannot be the drains, for, while it cannot be doubted that individual faults in house drains or portions of public sewers will, in Dublin as elsewhere, lead to disease and death, we must look for some other cause for the steady increase of the disease in the city. It may be better, here and at once, to freely admit that

[a] Sir Charles Cameron tells the writer that, in consequence of the Typhoid Fever Inquiry Committee's Report laying so much stress on the high level of subsoil water, the Public Health Committee have instructed Mr. Spencer Harty to establish observation wells, and that he has four wells now under observation in different parts of the city. The water in each of these wells is as high as it possibly can be.

the water carriage of sewage, dangerous everywhere, is peculiarly dangerous in Dublin, where there is a permanent high level of subsoil water, and where there is no system of subsoil drainage. The gradual slope of the surface towards the river insures that the subsoil water, having no vent, shall be always at as high a level as it possibly can be. The city is, however, now committed to the water carriage system, and the sanitary authorities must render it as little harmful as possible by providing ample drainage for the subsoil. Were this water pure, and uncontaminated by sewage, it is quite probable that it could not then be charged with more than increasing the malarial and rheumatic troubles of the inhabitants, and increasing the death-rate from phthisis; but, as it is sewage-polluted by leakage from drains and sewers conveying typhoid germs, it must be taken seriously into account as a factor of the high death-rate from this disease. For what does the typhoid bacillus want to enable him to become dangerous? Free dilution by water.[a] Once he gets this, he is ready to pass off from the surface[b] of the water, and to spread the disease through any of the channels mentioned in the Typhoid Fever Report.

Taking the high level of subsoil water as an established fact, its pollution by sewage being also admitted, and its stagnation being incontrovertible, it requires no spirit of divination to estimate the effect of such a condition on the health of the Dublin citizens.

Concentration of this subsoil water would mean that as it increased in specific gravity, the dangerous matters from the sewage would float more and more to the surface, and so more and more spread the disease. Nor is typhoid the only disease which the citizen need fear: whatever is true of typhoid fever is true of cholera,[c] and probably of other diseases also. Now, unfortunately for Dublin, the various improvements in sanitary matters which have been for some time in progress, and are still going on, all tend to concentrate the subsoil water, and to direct it to discharge its gases under the houses. The causes of increased stagnation and concentration of subsoil water are as follows:—

1. *Less addition to Subsoil Water.*—The waterproofing of the surface of the streets by the excellent pavement, of which the

[a] See Report by Prof. M'Weeney—Typhoid Fever Report. Dublin. 1893.

[b] It is probable that the sewage floats on the surface of the partially brackish water which lies under the low-lying areas of the city.

[c] "The Prevalence and Distribution of Cholera in Dublin, 1866." By T. W. Grimshaw, M.D. Dublin Journal of Medical Science, 1878.

citizens are so justly proud, is, from a subsoil water point of view, in Dublin, an element of danger as long as the subsoil water level is high. The pavement prevents the addition of fresh rain-water to the subsoil, and so helps stagnation—less fresh water is added to the subsoil, and so there is less change. Now it only remains to prove that less water is taken from the subsoil to prove the concentration of the subsoil water.

2. *Less Subtraction from Subsoil Water.*—(*a.*) The sewers, connecting drains, and house drains, all of which formerly drained the subsoil, are daily being made more and more watertight, and, therefore, drain the subsoil less and less.

(*b.*) Evaporation is checked by pavement.

(*c.*) The inhabitants have ceased to pump the water out of the ground.

Consequently, owing to No. 1, less rain gets down to dilute the stagnant water; and, owing to No. 2, less water is drained away. Not only is this the case, but, evaporation being checked by the waterproof street pavement, almost all the evaporation is compelled to take place through the house basements.

Thus summer and winter the unfortunate citizen is subject to the baneful influence of the putrid water that lies under his feet. In summer the sun, instead of acting as the scavenger and purifier, which Providence intended it should be, by warming up the street surfaces drives gases into the houses.[a] It is evident that if the water was within a few feet of the surface it would be much more heated, and therefore more dangerous than if it were, say, twenty feet below the surface of the street. In winter the fires draw the gases into the basements, and then the typhoid bacillus works his wicked will in milk and food stored in the pantries, &c. No doubt concrete, so long as it does not crack, will afford a certain amount of protection in a house basement.

The writer has already pointed out in "Typhoid Fever and How to Avoid It,"[b] that "much confusion has been created by the statement that in certain cities when the ground water is high typhoid fever-rate is low, and *vice versa.* This relates really to the drinking water from wells, which when they are low are dangerous, and when high have good water in them."

Dublin must be judged for itself, and in Dublin a high level of

[a] Dr. Tatham in Manchester has found that, when the ground temperature at a depth of four feet from the surface rises to 56° F., summer cholera becomes an epidemic.

[b] Health Record. January, 1892.

subsoil water must ever be a source of danger to the public health, and must tend to lower the health of all. The increase of typhoid fever keeps pace with the increase of stagnation and concentration of its polluted subsoil water, and is in inverse ratio to the improvements in sewers and house drains.

It has been suggested that pumping the subsoil water might be "pumping the Liffey into the Liffey;" but this is not the case, as in many places where the water is high there is little or no movement of the level with the rise and fall of the tide, and even if it were the case it would be a fortunate opportunity of washing the polluted subsoil. Such pumping as has been carried out has been of benefit. The pumping engine in Trinity College has, for over twenty years, kept down the level of the subsoil water within the College enclosure, and since its erection no epidemic of typhoid fever has ever broken out within the walls. The windmill pump, which worked in the North Lotts for a year and a half, at the end of the tunnel which was being made under the Liffey, *drained the subsoil as far away as Summerhill.*

Experimental pumping might be carried out at once without much cost. A portable engine working a portable pump could easily be placed where the water was found to be high, and where the fever-map pointed out that its services were most required. Six months pumping would tell its tale in the district.

A mere geological map of the city area throws no light on the problem of draining the city. Glacial drift of alternating mud and gravel, with a total depth varying from 50 to 200 feet, overlie the primary rocks. The promiscuous way in which mud and gravel crop up throughout the city, makes it difficult to predict where the pumping could most successfully be carried out; but this, after all, is an engineering question, and presents no real difficulty.

In summing up, three elementary propositions present themselves:—

1. Typhoid fever was introduced into the city principally by the watercloset system of sewerage.[a]

2. Typhoid fever has become endemic in Dublin through the leakage of the sewers and drains into subsoil water, which is at a high level.[b]

[a] See Report, Royal Sanitary Commission, Dublin, 1879–80, and Report, Typhoid Fever Inquiry Committee, 1898.

[b] See Report, Typhoid Fever Inquiry Committee. 1898.

3. In the foregoing it will be seen that the increase of typhoid fever in Dublin corresponds with, and is in proportion to, the concentration of the high-level polluted subsoil water, such concentration being at inverse ratio to improvements in drains, sewers, and pavements.

The typhoid fever death-rate is higher in the waterlogged area, and lower in the remainder of the city,[a] than when reported by the Registrar-General and Sir Charles Cameron[b] for the years 1882 to 1887—as, waterlogged area, 1 in 365; remainder of city, 1 in 531. The improvement in drains and sewers in the area not waterlogged has lowered the death-rate from this disease in this area, while the waterlogged area is going from bad to worse.

ART. XVII.—*Large Coagulum adherent to the Mitral Valve in a Case of Acute Rheumatism fatal through Hyperpyrexia.*[c] By JOHN W. MOORE, M.D., Univ. Dubl.; F.R.C.P.I.; Physician to the Meath Hospital.

ON Monday, October 9, 1893, Thomas S., aged twenty, a recruit in the Dublin Metropolitan Police, was admitted from Kevin-street Barracks to the Meath Hospital under my care. When admitted, he complained of constant pains in both knees and in the ankle-joints, which were swollen and tender on pressure. The pains were much increased on moving the limbs. The right shoulder was also affected, and, in addition, he complained of sore throat as well as of a feeling of tightness over the precordial region.

Mr. Francis W. Goodbody, clinical clerk, and Mr. E. A. Bourke, the case-taker in charge, to whom I am indebted for very full notes, ascertained that the patient had been ailing for at least a week before admission, the chief symptoms being nausea and vomiting of food. On the Saturday evening previous to his admission (October 7) he had a shivering fit, which he attributed to a chill caught while at drill on the morning of the day named. Next day (Sunday) he was obliged to stay in bed, and suffered from severe shooting pains in his back.

His past medical history was that as a child he had an attack

[a] See Supplement. Report, Typhoid Fever Inquiry Committee. 1893.

[b] Distribution of Enteric Fever in Dublin. T. W. Grimshaw, M.D., and Sir Charles Cameron. 1888.

[c] Read before the Section of Pathology of the Royal Academy of Medicine in Ireland, on Friday, November 3, 1893.

of scarlatina, and in May and June, 1891, he was laid up with an attack of rheumatism, which affected chiefly his knees and ankles.

On the evening of his admission his pulse was 86, the respirations were 26, and the temperature was 102·8°.

On examination next morning a well-marked systolic murmur was heard over the mitral area. There is no note as to the presence or otherwise of a presystolic murmur, but there was no valvular thrill, nor could any evidence of pericarditis be detected. The tongue was thickly coated. The urine was concentrated, dark-coloured and turbid from urates. There was unusually profuse sweating, the sweat having an intensely sour smell and an equally striking acid reaction. The patient seemed to be very uneasy and anxious about himself.

The affected joints were wrapped up in absorbent cotton wool, he was clad in flannel, a small blister was applied over the region of the heart, and he was put on fair doses of salicylate of sodium.

The temperature fell steadily to 99·6° on the morning of Thursday, October 12, and to 98·6° on the morning of the 13th; but, notwithstanding, the patient was evidently not doing well. He complained of great thirst, and although the pain in the shoulder had disappeared he suffered intensely from pains in his right knee and ankle, and passed a sleepless night.

On the afternoon of Friday, the 6th, the patient's legs and feet became quite numb and cold, so that Mr. Alfred Power, the House Surgeon, stopped the salicylate treatment and gave quinine, digitalis, and opium in combination in a pill.

Early on Saturday, the 14th, temperature rose to 101·0°, and the heart's action became both quick and violent, while the pulse at the wrist was felt with difficulty. There was profuse sweating, especially about the face and chest. In the evening the temperature was 103°, and the patient was losing consciousness.

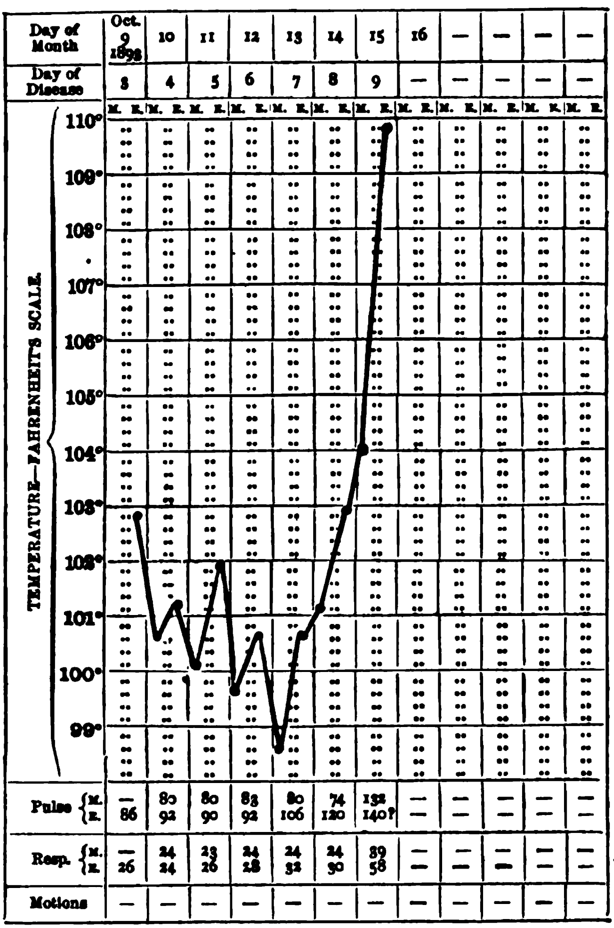
On Sunday morning, the 15th, everything had changed for the worse. The thermometer stood at 104°. The tachycardia was more pronounced, and dyspnœa had set in, assuming to some extent the character of Cheyne-Stokes respiration. The feet and legs were quite cold, but the trunk was burning hot.

As it seemed risky to put him into a cold bath, or to apply the ordinary wet pack, he was wrapped in wet towels. At 3 45 p.m. the temperature read 106·6°. It was afterwards taken hourly until death occurred shortly after 11 30 p.m., with the following result:—

6 p.m.—107·0°.
7 „ —108·0°.
8 „ —108·2°.
9 „ —108·2°.
10 „ —108·4°.
11 „ —108·6°.
12 midnight.—110·0°, nearly half an hour after death.

Clinical Chart of Temperature, &c.

T. S.; Age, 20; Disease, *Acute Rheumatism;* Result, *Death.*



A *post-mortem* examination was made on the morning of Monday, October 16, by Mr. E. E. Lennon. The lungs were healthy. The liver was slightly full, and rather soft. There was no trace of pericarditis, or of recent endocarditis. The heart was hypertrophied, but distinctly softened. A little atheromatous change was observed at the usual situation a few lines above the aortic valves. These were themselves quite healthy. A large clot closely adhered to the mitral valve, blocking up its lumen to a very considerable and serious extent. This large clot was apparently of old standing. It probably dated back to the previous attack of acute rheumatism in the spring of 1891. At all events it is hardly possible that it could have developed during the patient's fatal illness.

Professor J. A. Scott was good enough to examine the specimen at my request, and I have received the following note from him:—

> "I find that the vegetations on the mitral valve in your case consist of a blood clot. I was unable to make an extended examination on account of the specimen not being properly hardened, and as I did not care to damage the appearance of the specimen by cutting away a portion when it could be done most usefully.
>
> "If it is thought well, this can be done subsequently."

Dr. Scott suggests that the sequence of pathological phenomena was—an attack of rheumatic endocarditis, involving the margin of the mitral valve, an escape and consequent perishing of leucocytes, which excited fermentation, and caused coagulation of the blood, thus leading to the formation of this great clot, which resembles a vast valvular excrescence, outgrowth, or vegetation.

THE ELEVENTH INTERNATIONAL MEDICAL CONGRESS.

THE Executive Committee has decided, at its meeting on November 12th, that the Eleventh International Medical Congress, which had been postponed by resolution of August 2nd, 1893, until April of the following year, should take place in the period from March 29th to April 5th, 1894. The Committee has already taken the necessary measures to secure convenient accommodation at usual prices for the visitors, and nothing is being left undone to make the most satisfactory arrangements and to ensure the complete success of the meeting.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Lectures on the Comparative Pathology of Inflammation, delivered at the Pasteur Institute in 1891. By ELIAS METCHNIKOFF. Translated from the French by F. A. STARLING and E. H. STARLING, M.D. London: Kegan Paul, Trench, Trübner & Co. 1893. Pp. 218.

THE conclusion to which all the facts and arguments in these lectures lead is as follows:—"Inflammation generally must be regarded as a phagocytic reaction on the part of the organism against irritants. This reaction is carried out by the mobile phagocytes sometimes alone, sometimes with the aid of the vascular phagocytes, or of the nervous system.

"This theory is based on the law of evolution, according to which the properties that are useful to the organism survive, while those which are harmful are eliminated by natural selection. Those of the lower animals which are possessed of mobile cells to englobe and destroy the enemy survived, whereas others whose phagocytes did not exercise their function were necessarily destined to perish. In consequence of this natural selection the useful characteristics, including those required for inflammatory reaction, have been established and transmitted, and we need not invoke the assistance of a designed adaptation to a predestined end, as we should from the teleological point of view."

The fact that the reaction frequently fails in its endeavour to destroy the invader, that animals succumb to the attacks of microbes and other irritants, shows that the reactive apparatus is not yet perfected, but is still undergoing development. Starting with the idea that infection is a struggle between two organisms, and that the organs of attack and defence are objects of zoological study, it follows that comparative pathology is a branch of zoology. As a zoologist the author writes.

In the unicellular organisms traumatic lesions are quickly recovered from. Examples are given of this in the case of

Amœba, Actinophrys, Stentor, and Vaucheria. But these simple organisms are subject to infection by parasites, both animal and vegetable, and numerous cases are recorded of this, in some of which the parasite is destroyed and ejected or digested, while in others the invaded organism succumbs.

Passing to the multicellular organisms, we have first a series of most interesting observations on the behaviour of the plasmodium of myxomycetes. If a foreign body such as a piece of glass tube is pushed into the protoplasm, it is englobed, retained for a time, and then ejected as any other indigestible body would be. If irritants, mechanical or chemical, be applied to the edge of the plasmodium the protoplasm quickly moves away, leaving the injured part behind. On the other hand, certain substances exert an attractive influence on the protoplasm which moves towards them. Here we have a remarkable fact—namely, sensibility of the protoplasm as manifested by what is now termed negative and positive chemiotaxis. This sensibility, which is obviously analogous to that of man and the higher animals, obeys like them the law of Weber. It is very commonly met with in lower organisms, both animal and vegetable, and is manifestly of general importance. In the capability which the plasmodium of myxomycetes possesses of ejecting indigestible substances, of digesting other substances, and of moving away from injurious agencies, it has powerful means of protecting itself.

In the higher plants we meet with nothing analogous to inflammation. In these the thick cuticle and cell-walls are the protective organs, and if these are not able to keep out the irritant the invaded cell dies, while the neighbouring cells may multiply and form a scar or hypertrophic growth.

The great gap separating the protozoa from the metozoa is bridged over to a certain extent by the embryonic forms of sponges, medusæ, &c.—where the larva consists of two layers only, an outer enveloping layer and an inner layer, forming either a parenchymatous mass of amœboid cells, or an epithelial layer surrounding a digestive cavity. The former is known as the phagocytella stage, the latter the gastrula. The former is analogous to certain colony-forming Protozoa, the protospongia. In both cases the inner amœboid cells are able to englobe solid bodies.

In the sponges, which consist of three layers, the cells of the mesoderm have the power of englobing and digesting solid bodies. The digestion does not seem to be of a peptic nature, as it is unac-

companied by formation of acid. Foreign bodies introduced into the sponges are surrounded and englobed by the mesodermic phagocytes, and may be used to build up or strengthen the skeleton. Although living organisms are commonly seen in the cells of sponges, real parasites, with the infectious diseases they bring in their train, have not been discovered. While in sponges the phagocytic properties are confined to the endoderm and mesoderm, the cells of the ectoderm possess sensibility to the composition of the surrounding medium, and refuse to open their pores to harmful substances.

In Cœlenterata, Echinodermata, and Vermes, we find the same phagocytic reaction against irritants manifested by the cells of the mesoderm. In these groups there are no or few white corpuscles in the blood, and they take little or no part in the reactive process; but in the higher invertebrates—Arthropoda, Mollusca, and Tunicata—we find that an accumulation of white corpuscles takes place around any injured spot or about parasites. Indeed, it was in the small crustacea that the process of phagocytosis was first clearly followed by the author. The accumulation of leucocytes is facilitated by the lacunar circulation existing in these animals. In some cases, where the sensibility of the phagocytes remains negative, and a favourable condition consequently exists for the invasion by parasites, the animal is protected by a thick chitinous integument in a manner analogous to that in which nematoids and plants are defended.

Passing to the vertebrates—amphioxus, which possesses no blood corpuscles, and is protected by a tough limiting membrane, seems incapable of inflammatory reaction to injuries.

In the embryos of axolotl and of triton experiments are described, in which the edge of the fin was touched with nitrate of silver and the subsequent events watched. While the fixed connective tissue cells underwent only insignificant changes, and took no part in the process, an accumulation of amœboid cells of the mesoderm took place at the spot injured, and this without any alteration in the vessels or diapedesis of corpuscles. Hence is clearly demonstrated the possibility of an inflammatory reaction in vertebrates without the intervention of the vascular or nervous system—"Thus a genealogical tree of inflammation can be drawn up, starting with the researches on the reactive phenomena of the invertebrata, and completed by facts observed in the embryonic and early larval stages of vertebrates. These facts prove that

the reactive phenomena ensuing in lesions are in their origin essentially the same in the two great branches of the animal kingdom. But, whereas in the invertebrates the processes have remained stationary, in the vertebrates they have become, in the course of development much more complex in character. Even in the older larvæ of triton and axolotl, which are provided with a larger number of blood-vessels wide enough to allow the passage of leucocytes, the inflammatory reaction takes place in the classical manner that has been so frequently studied during the last twenty-four years. The same lesions still produce an acceleration, then a slowing of the blood-stream, followed by an accumulation of white corpuscles in the peripheral zone, and their emigration and movement towards the injured spot."

Even when the phagocytic action is mainly carried out by emigrated blood corpuscles, the amœboid cells of the connective tissue also take a part and move towards the seat of injury. The supposed phagocytic action of the fixed connective tissue cells is now believed not to exist. Fixed connective tissue cells, containing coloured particles, are now believed to be derived from amœboid cells, which in an earlier stage were phagocytic and englobed the foreign particles, and then underwent development into stationary cells of the tissues:—"It is apparent that the inflammation of vertebrates, in which the defending phagocytes emigrate from the vessels to proceed against offending bodies, is distinguished only quantitatively from the analogous phenomena in invertebrates, and must therefore be also regarded as a reaction of the organism against deleterious agents. We must conclude that the essential originating factor, *the primum movens of inflammation, consists in a phagocytic reaction on the part of the animal organism.* All the other phenomena are merely accessory to this process, and may be regarded as a means to facilitate the access of phagocytes to the injured part."

Four varieties of white blood corpuscles have been described:—1. The small mononuclear cell, or lymphocyte; 2. The large mononuclear cell, a later stage of 1; 3. The multinuclear cell or so-called neutrophile leucocyte; and 4. The eosinophile cell. Of these 2 and 3 are phagocytic, while 1 and 4 are not. The division of these cells into lymphocytes and myelocytes must be given up. The cells of the first group are found in various other organs than the lymphatic glands. It is the eosinophile cells which are specially formed in the bone marrow. The neutrophile cells develop in the

blood itself at the expense of the small cells which have been formed in various organs. Leucocytes are found also in the lowest fishes which have neither lymphatic glands, bone-marrow, nor spleen, and are derived from the mesodermic cells of the embryo, and perhaps also from the endothelium of the blood-vessels. Leucocytes multiply by division in the blood—the large mononuclear variety chiefly by indirect, the polynuclear variety by direct division.

The phagocytic cells take up all manner of things into their interior. The most interest attaches to their absorption of bacteria. That these are taken up alive is shown by their movements in the interior of the cell, and also by the power of development retained by the englobed microbes. Every cell will not englobe every bacterium. Thus the leucocytes of mice and guinea-pigs will not devour the bacilli of anthrax, and many other examples are given where in cases in which the animal is peculiarly susceptible to a certain kind of bacterium, this is avoided by the leucocytes. Again, one kind of leucocyte will absorb one bacterium, a different kind, another. Thus in man the mononuclear leucocytes will not take up the streptococci of erysipelas or the gonococci, while these microbes are taken up by the polynuclear cells. The latter, on the other hand, will not take up the leprosy bacilli, which are readily devoured by the mononuclear cells. These observations show that the bacilli are not inactive bodies, otherwise they would be taken up indifferently like dead matter.

That chemiotaxis plays a great part in this process is now evident, and has been proved by Lehr, Buchner, and many other observers. The absorbed bacteria are often destroyed by the ferments now known to exist in the leucocytes. In other cases they continue to live in the body of the cell, and may subsequently invade the entire organism. Sometimes, although not killed, their development is delayed by the phagocytes.

That leucocytes can develop into connective tissue cells, although generally doubted by pathologists, is strongly maintained by the author. In amphioxus he has observed the change of polynuclear leucocytes into mononuclear, and of these into connective tissue cells. In mammalia we have no proof that the polynuclear leucocytes can be converted into mononuclear cells, but these do certainly become converted into epithelioid and giant cells.

Next to the leucocytes the endothelial cells of the vessels play the most important part in inflammation. These are primarily

formed from the mobile cells on the surface of the yolk sac. They retain mobility, being contractile and even amœboid. They are also phagocytic, as in cases where pigeons have been inoculated with swine septicæmia, the endothelial cells of the hepatic vessels are found crowded with the bacilli. The connective tissue cells take a comparatively insignificant part in inflammation.

That the leucocytes emigrate from the vessels by their own amœboid movements, and that they are not passively forced through the wall is generally admitted, and is proved by the fact that the process will take place after the heart has stopped. The force drawing them out is chemiotaxis, and the absence of emigration after application of quinine is not due to paralysis of the corpuscles, which are still able to move, but to a negative chemiotaxis exerted by this substance. The same is the cause of the absence of emigration in many of the most virulent bacterial diseases.

Numerous experiments show that the nervous system exerts an influence on inflammation. This, however, would appear only to accelerate or retard its course.

Tuberculosis is taken as the type of a chronic inflammation. The views of Baumgarten, that the cells are derived from the fixed tissue cells, is opposed, and it is attempted to show that the giant and epithelioid cells are really derived from the mononuclear leucocytes and the endothelial cells of the vessels. A most interesting account is given of the struggle between these cells and the parasite.

There are two classes of serous inflammations. In the first, although the cells of the vessels react as usual, and allow a serous transudation which often contains numerous bacteria, there is no emigration, in consequence of a negative chemiotactic influence on the leucocytes. Hence in these cases the body falls an easy prey to the bacteria, as occurs in many of the most virulent bacterial diseases.

In the second class of serous inflammations the exudation may occur at a distance from the deposit of microbes, and may contain no bacteria at all. An example of this is seen in the serous pleurisy which accompanies diphtheria in guinea-pigs. It is believed that this serous fluid is not a means for destroying the microbes, but that it possibly may serve to attenuate or modify the action of their products, either by containing antitoxins or by diluting the bacterial toxins and so rendering them less active.

A study of comparative pathology shows that serous inflammations are more recent in their evolution than those which are attended with a leucocytic reaction; they are also of less importance than the latter.

Finally, the current theories of inflammation are submitted to examination and shown to be insufficient, while the arguments which have been raised against the theory of the author are met and answered.

We have been able to touch only on a few of the most important details given in this most fascinating book. No other pathological work of recent years is so full of interesting and suggestive matter, and we cannot too highly recommend it to the attention of all our readers. The text is copiously illustrated with engravings, and there are three coloured plates appended.

The translators have left nothing to desire in the way they have done their work, and we owe them a debt of gratitude for making this truly remarkable work accessible to all English readers.

The Diseases of Childhood (Medical). By H. BRYAN DONKIN, M.D. (Oxon.), F.R.C.P.; Physician to the Westminster Hospital, and to the East London Hospital for Children at Shadwell; Joint Lecturer on Medicine and Clinical Medicine at Westminster Hospital Medical School. London: Charles Griffin & Co. 1893. Pp. 433.

THIS volume forms the latest addition to Griffin's most excellent series of Medical Text-books. It is printed and brought out in the same faultless style as the other productions of the same publisher.

Dr. Donkin's work is one of those which are always valuable as representing the personal and prolonged observations of a careful observer. It is based to a great extent, as he says in the preface, on the records and recollections of nearly twenty years' experience at the East London Hospital for Children and elsewhere. With a candour and modesty, which are as admirable as they are rare, he says, "Notices of variola and of some other maladies, of which my personal experience has been inconsiderable, have been omitted."

In arrangement, the book resembles most of the modern works on Diseases of Infancy and Childhood. The author, being limited as to space, has assumed the reader's general knowledge of the

diseases discussed, and emphasised only the points pertaining to childhood; hence, though the work is not excessively large, space is left for the introduction of many illustrative cases which add to the interest and value of the book.

The first chapter—perhaps the most important in the book—on Infantile Wasting and the Feeding of Infants, is good and practical. We are glad to see that Dr. Donkin, in his remarks on feeding, relies far more on the results of experience and observation than on any theoretical considerations based on the comparative analyses of cow's and woman's milks:—"It is plain that here, as elsewhere, biologico-chemical averages, owing to the complexity of their data, are not of paramount value for practical application to individual cases." We regret, however, that the author's directions as to feeding children are not more full. Practically no directions are given as to the age at which the diet of infancy may be extended by the addition of bread, puddings, meat, &c. It appears to us that any work on Childhood and Infancy should devote a very large space, indeed, to the subject of Food in Health and Disease, and that the directions should be extremely full and definite. The average young doctor finds it far more easy to treat a case of scarlatina than to advise a mother as to exactly the best food to give her child. We think, too, there might have been a chapter on Baths and Clothing—subjects on which it is not easy to obtain information from books.

The descriptions of the various forms of disease, diagnosis, &c., are good. We regret, however, to say, we think the sections on treatment lack preciseness In a work on Children's Diseases the doses of each drug recommended in any disease should be indicated for various ages. In the book before us hints are given rather than directions. That is all very well if Dr. Donkin's readers had some of his experience, in order to enable them to translate his hints into practice, but we fear the junior practitioner may find a difficulty at first in doing so. As an example, we find in the chapter on Bronchitis: "Carbonate of ammonia I give in nearly all cases"—nothing being said as to how much or how often. We think Dr. Donkin's readers are just as much entitled to know how he employs a drug as what drug he recommends.

Perhaps we have laid too much weight on this want of preciseness, for in other respects we are greatly pleased with the work. It is written in a sensible and quiet spirit, and evidently comes from the pen of a man who has no love for the latest fads in

medicine, whatever they may be. We believe that our readers will derive many valuable hints from its perusal.

Brown's "South Africa:" a Practical and Complete Guide for the Use of Tourists, Sportsmen, Invalids, and Settlers. London: Sampson Low, Marston & Company. 1893. 8vo. Pp. 233.

MR. A. SAMLER BROWN'S "Guides" are now very widely and favourably known, and his "South Africa" will certainly enhance the popularity of the series. The object of the book, as stated in the preface, is to place in a condensed and easily intelligible form the mass of information necessary to tourists, sportsmen, invalids, and settlers—the four great classes of travellers in South Africa.

We, members of the medical profession, will naturally turn with greatest interest to those portions of the guide which describe South Africa as a health resort. Physicians and invalids alike are emphatically warned by the author, however, that this country is not adapted to those who cannot, to a certain extent, shift for themselves. "To send sick people in the last stages of consumption on a fatiguing journey which leads to places where the unfortunate patient cannot procure proper attention, is most certainly wrong." We heartily re-echo these words of Mr. Samler Brown, who further states that there is not a town or health resort in South Africa where he has not been requested to give the "uttermost prominence" to this fact.

"Although a young progressive country such as this," observes Mr. Brown, "cannot fail to keenly interest every visitor who will take the trouble to inform himself on the past history of its variously coloured races, on the enormous diversity and wealth of its indigenous flora and fauna, and on the magnificent geological problems which it spreads before even the most unobservant eye, those who pay it only a brief visit will naturally ask for a somewhat concise list of the most salient points which they ought not to miss."

These, the author thinks, might be briefly recapitulated as—Cape Town and its suburbs, Table Mountain, &c.; the Paarl, with excursions as far as Ceres and over Bain's Kloof; Worcester and the Hex River Pass; the Congo Caves at Oudtshoorn and the Zwartberg and Montagu Passes; the Knysna and other forests; Port Elizabeth, Grahamstown, Durban, Pieter Maritz-

burg, Howick, Kimberley and its diamond mines, Johannesburg and the gold mines, and so on. The visitor should on no account miss a "ride" in the train through some part of the Karroo or Veldt—that is, the dry highland districts and the plains respectively—nor should he omit to see as much as possible of the customs of the natives. The Eastern Provinces and Natal are the most attractive in this respect.

There is an immense fund of information in this book, and it is illustrated by a number of well-drawn coloured maps. We have sections on the game of South Africa, its history, meteorology, physical geography, productions, and mines. A number of routes through the South African Colonies from Cape Town as head-quarters are described, and this excellent "Guide" ends with a copious index of proper names and things. No visitor to South Africa should be without Mr. Brown's book, which is beautifully printed on a high-class paper and costs only half-a-crown.

Antiseptic Dry-air Treatment of Consumption: a Practical Treatise dealing with the Origin of Consumption: how it can be prevented and successfully treated by rational and safe means. By JOHN J. HARTNELL, M.D.; Fellow of the Obstetrical Society, &c. Second Edition. London: J. & A. Churchill. 1892. Pp. 104.

THIS is a very readable and original little book. It is, however, marred by a loose and somewhat exaggerated style of writing. It is mainly written to expound the system of treatment by medicated air advocated by the author.

His object is to make the patient continuously breathe air freed from excess of watery vapour, and "impregnated with volatile medicaments which impart to the atmosphere oxydising and antiseptic properties." This end he hopes to attain by the employment of an "antiseptic dry-air exhaler"—an instrument consisting of a fan worked by clockwork, which drives a current of air through frames covered with muslin or some kind of material wet with eucalyptus oil, guaiacol, sanitas oil, or some such body.

He also advocates an apparatus worked by the hand, whereby compressed air impregnated with these drugs can be inhaled. He gives notes of a number of cases treated by this method with wonderfully successful results.

There are, in addition, chapters on Food, Clothing, Health

Resorts, and Ocean Travels, which are characterised by common sense.

The book is short and easy to read, and we think most practitioners will benefit by its perusal.

The Stœchiological Cure of Consumption and Diseases of the Respiratory Organs. From "Letters to a Patient." By JOHN FRANCIS CHURCHILL, M.D. Third Edition. London: David Stott. 1893. Pp. 38.

WE shall not spoil Dr. Churchill's conundrum by explaining "that blessed word" *stœchiological.* It will be found in massive dictionaries. The author published in 1857 his discovery of the hypophosphites as an infallible cure for phthisis in its early stages. "They not only cure the disease when not advanced beyond a certain point; but, what is more important still, they are a sure preventive against it in the case of all who are predisposed to the complaint." He has now carried his mode of treatment to such perfection as "will hardly be surpassed until we have found the means of supplying new lungs." He has grown in the wisdom of the serpent since 1857. He has determined, "after mature reflection," to keep his knowledge to himself this time; and the profession will never know *certain* specifics for diphtheria, whooping-cough, gout, rheumatism, neuralgia, heart disease, gravel, Bright's disease, and for immunity from tropical fever; *probable* cures for typhoid fever, cholera, and diabetes, and "possibilities too numerous to mention."

Manual of Urine Testing, including the Physical Characters, Qualitative and Quantitative Examination of the Urine; together with the Clinical Information to be derived therefrom. By JOHN SCOTT, B.A., M.B., B.Ch., B.A.O. (R.U.I.); Scholar and Prizeman in Medicine, Midwifery, &c., Queen's College, Belfast; Gold Medallist in Midwifery, Diseases of Women and Children, Ulster Hospital, Belfast. Second Edition, enlarged. Dublin: Fannin & Co. 1893. Pp. 52.

THREE years ago (November, 1890) we noticed with approval the first edition of this little book, written by one who was then but an undergraduate in Medicine though a graduate in Arts of the Royal University of Ireland. The author has since graduated in Medi-

cine, Surgery, and Midwifery, and his excellent Manual has appropriately grown to more than double its original size. This second edition runs to 52 closely printed pages, full of valuable information, compared with only 25 pages in the first edition.

We can heartily recommend Dr. Scott's book as a reliable guide in urine-testing. Students, especially, will find in its pages all that is necessary to enable them to test urine either qualitatively or quantitatively. This Manual does great credit to Dr. Scott's powers both of acquiring and of imparting knowledge.

RECENT WORKS ON ANATOMY.

1. *Manual of Practical Anatomy.* Vol. I.—Upper Limb, Lower Limb, and Abdomen. By D. J. CUNNINGHAM, M.D., F.R.S. Edinburgh and London: Young J. Pentland.
2. *Dissections Illustrated. A Graphic Handbook for Students of Human Anatomy.* By C. GORDON BRODIE, F.R.C.S. With Plates by Percy Highley. Part II.—The Lower Limb. London and New York: Whittaker & Co.
3. *The Rotatory Movements of the Human Vertebral Column, and the so-called Musculi Rotatores.* By ALFRED W. HUGHES, M.B., F.R.C.S., &c. Edinburgh: E. & S. Livingstone.
4. *Anatomy: Descriptive and Surgical.* By HENRY GRAY, F.R.S. Thirteenth Edition, by T. PICKERING PICK. London: Longmans, Green & Co.

1. WE know no one who writes simpler, clearer, or more readable anatomy than Professor Cunningham, and the present issue of his Practical Anatomy is no exception in this regard. Previous to this, his Practical Anatomy appeared in three volumes—one devoted to the upper and lower limbs and the thorax, a second to the abdomen, and the third to the head and neck minus the brain and organs of special sense, which latter were not included in any part of the work. The objection to this form was, that there were too many volumes, the price of the work was correspondingly high, and the absence of descriptions of the brain cord and sense organs made it incomplete. To the present edition these objections cannot be urged. The volumes are to be two, and the brain and sense organs are to be included. We think that it would be better if there were but one volume. Still there are advantages in the way of portability and handiness which weigh strongly in favour of the division into two.

The volume before us is in every way an excellent piece of work. It is not merely a new edition of the old manuals, on the contrary, it has been entirely re-written and re-arranged. In general it runs on nearly the same lines as its predecessors, but there are many changes in the details—much unnecessary matter has been left out, and greater brevity has been aimed at, and reached, without in any way injuring or crippling the descriptions. Several excellent illustrations and some good diagrams have been added. Very many of the illustrations are taken from frozen sections; on the other hand, the ordinary pictures of dissections are comparatively few. We would rather see them more numerous; it is a great aid to dissection to have before the student a good picture of a careful dissection of the part at which he is working. The diagrams are very good, but some of them require further explanation. For instance, it would be well to tell the student how the section is supposed to be made in that on page 252; the references are not correct in page 439. It is better to let the descriptions of illustrations err on the side of profuseness rather than in the opposite direction; frequently the student who consults them knows absolutely nothing about the region. The upper and lower limbs are treated in a most intelligible and judicious manner, sufficient directions are always given to guide the beginner in his course, and the points of practical surgical or medical importance are described with the greatest care, so that the advanced student will find much to engage his attention.

The latter half of the book is devoted to the abdomen, which is described in a most perfect and thorough-going manner. In this division of the work particularly, everything of practical importance is most fully treated. These remarks apply specially to the anatomy of hernia, and of the pelvic viscera in the female. Two very ingenious double-page plates illustrate the reflections of the peritoneum from the front and back walls of the abdomen respectively. One is by a Russian anatomist, the other by the author. Several of the illustrations of this region come from the old friend of all medical students, Gray's Anatomy.

In mapping out the regions of the abdominal cavity the author follows the plan which he proposed to the Anatomical Society of Great Britain and Ireland last winter, without reference to any other methods at present in use. It might have been well, though perhaps confusing, to briefly describe the plan adopted by many other anatomists.

From what we have said it will be seen that we are thoroughly pleased with Professor Cunningham's Manual. We think it an excellent work, clear, simple, correct, useful alike to the beginner and the advanced student, a thorough guide in the dissecting-room, and a handy and reliable book for home study.

2 THIS is the second of the four parts promised. The first part illustrating the anatomy of the upper limb, we have already reviewed in these pages, and upon that occasion we were able to give a very favourable opinion of the pictures included in that part. We also expressed an opinion that such illustrations accurately drawn from careful dissections may be most valuable aids in dissecting-room work, when used by the student as types of the dissections which he should produce, and as a means of identifying the various structures which he comes across. On the other hand, we believe that there can be nothing more detrimental to a practical knowledge of anatomy than substituting the study of atlases for practical dissection, which is the only true road to useful anatomy.

The illustrations are almost all two-thirds life size. The different structures are coloured in the conventional manner—veins blue, arteries bright red, nerves white and muscles dull red. The resulting pictures are very effective, all the structures come out in a very striking way, and can be readily recognised even in the darkest parts. Indeed we must say that the pictures are really pretty, at least to an anatomical eye, although perhaps here and there they do not quite satisfy the anatomical feelings as regards correctness. We think all such drawings should be made by the dissector himself, if perfect accuracy is to be obtained. No one without a thorough knowledge of anatomy can catch the thousand and one little points to be brought out in a picture of a dissection. What appears a trifling difference to the artistic eye, is possibly a grave mistake to the anatomist. On looking through the plates we noted the following points, which do not seem quite satisfactory to us. In the first picture (Plate XVIII.), the saphenous opening is almost two inches in length. This, in a drawing two-thirds life size, means an opening two inches and a half in the subject. In the next, the vastus internus seems to distinctly overlap the rectus in the middle of the thigh; and in the same plate the tyro might think that the vastus internus was the continuation of the adductor longus beneath the sartorius. In Plate XX., the twig of the

obturator going to the obturator plexus, *seems* to become superficial by passing forwards in a wrong position; by looking higher up, this impression is perhaps corrected. Then follow good pictures of the inner side of the knee and front of the leg. The dorsum of the foot is not so pleasing, no internal saphenous nerve is indicated. Two fine pictures of the gluteal region are followed by a third in which some points are very indistinct, particularly the reflected obturator internus and gemelli, which suggest forcibly a misplaced anus. These are succeeded by a good gluteal region with sacral plexus dissected from behind, two good pictures of the back of the thigh, in the latter of which the superior articular arteries appear to slope upwards to an unusual degree. The popliteal space and the back of the leg are well done; but in Plate XXXIII. (small picture) there is an unusual condition of the popliteal artery shown, which is decidedly confusing and misleading to the beginner. Then the series is completed by four plates devoted to the sole of the foot. The first one is not quite satisfactory in its posterior part—the muscles are continued back too far, and there is too little of the os calcis seen.

The letterpress, so far as it is confined to indicating the structures numbered in the plates, is very good, but the additional remarks and descriptions thrown in are not always to the point or improving. In one place we are told that the crural canal is bounded *above* by Poupart's ligament. Hilton's law, that the nerve which supplies a muscle supplies the skin over the area of its muscular action, is suggested as possibly explaining the extensive skin supply of the long saphenous on the inner side of the leg, into the fascia of which a strong band of the tendon of the sartorius is continued, and can be traced as far almost as the ankle. When the same reasoning is applied to the distribution of the musculo-cutaneous on the outer side of the forearm, and the reader is reminded that the biceps sends a strong tendinous slip down to the fascia of the forearm, the subject becomes slightly strained, particularly as the slip from the biceps is continued down on the inner, the nerve on the outer side of the forearm. All this, as well as the remarks on the morphology of the deep flexors of the calf and the muscles of the sole, might well have been omitted.

Notwithstanding these minor drawbacks, we must give the work before us a warm word of praise. Taken all round, the pictures are decidedly good and useful. They are pleasing to the eye, the

details are clear and striking, and we can recommend the atlas as one of the best we know of its kind.

3. This is a small monograph of some thirty-two pages, with five pages of illustrations, the scope of which is sufficiently indicated by the title. It is the record of an investigation carried out in the Anatomical Institute of Leipzig under the superintendence of the late Professor Braune.

The author first refers to the various statements made by different authorities, anatomists and physiologists, on the amount of rotation round a longitudinal axis allowed in the vertebral column, and the regions of the column in which this rotation takes place. With the object of clearing up certain discrepancies in these statements the investigation was undertaken. The method adopted was as follows:—The ribs were sawn off at the angles, the spinal muscles removed while the ligaments were left untouched. The pelvis was fixed securely to a vertical board, and a firmly fixed iron rod, round which the vertebræ could rotate freely, was introduced for some distance into the cervical spinal canal. A strong iron skewer was fixed to the occipital bone; this was used as a lever for rotating the column; and to each vertebra a light wooden skewer was attached, which showed the movement of each segment of the column; to each of these wooden skewers was fastened a small piece of cardboard, on which played a small plumb-line, this indicated on the cardboard the movement of the vertebra. By a simple calculation the movement between any two vertebræ could be determined.

The author then gives a record of the amount of rotation permitted between each two vertebræ in three columns treated in the manner described. The following are briefly the results obtained:—The lumbar spine possesses only an extremely slight power of rotation, so slight that none can be reckoned on during life. Incidentally it is pointed out that the lower articular processes of a lumbar vertebra are embraced so tightly by the superior articular processes of the vertebra next below, that no lateral motion is possible, although the contrary is sometimes taught. The dorsal region is capable of considerable rotation, to at least 45°, and in some cases even up to a right angle—that is, half a right angle on each side of the normal position. The movement is greater in the upper than in the lower dorsal region. The cervical vertebræ are specially distinguished by their great capability of rotation.

They possess a far greater amount of rotatory mobility than the dorsal vertebræ. The following would be about the average of Dr. Hughes' measurements; in every case the angle of rotation is calculated from the extreme position of rotation on one side to the extreme position on the other:—Lumbar region, about 12°; dorsal region, about 90°; cervical region, minus atlo-axoid joint, about 135°. In only one case is the alto-axoid rotation recorded—it was 105·7°.

Rotation of the whole vertebral column, including axis, about 342°, an amount of rotation which we think hardly takes place in the vertebral column of the living body.

Dr. Hughes says he undertook his research in order to settle certain discrepancies in the accounts of other writers; we think he ought to state more definitely how far he considers he has succeeded. There seems to be some want of uniformity in his statements—for instance, after previously showing us that the rotation permitted in the *whole* cervical region is about 240°, he states in his last paragraph that the neck rotation with that of the atlo-axoid joint added amounts to nearly a right angle.

As regards the musculi rotatores, he points out the extreme discrepancies in the accounts of these muscles in the best known English, German, and French work. As a rule, they are described as existing only in the dorsal region, &c. The author finds that they are present everywhere from the upper sacral region to the axis. There are two sets—the short bundles passing from vertebra to vertebra, arising from the arches of the vertebræ or bases of transverse processes, they are inserted into the arches at the sides of the spines; the long bundles which pass over one vertebra arise from the mammillary processes in the lumbar region, from the back of transverse processes in the dorsal, and from articular processes in the cervical region; they are inserted into the bases of the spines. It is pointed out that these muscles have very little effect indeed on the rotation of the spine, and it is suggested that instead of being called rotatores, that they should get an indifferent name, "Submultifidus," suggested by Professor Braune, is proposed by the author as the most suitable.

The little monograph is very interesting—the research has evidently been carried out with great care, the illustrations are very good, but we think that the conclusions of the author ought to be bolder and more definite.

4. GRAY has become a household word with every student of medicine, and even, we would say, with every member of the family, of every student of medicine in these countries, and no wonder, seeing that he has already reached his thirteenth edition. There must be something good in a work which appeals so strongly to the popular judgment. The anatomy is not of the high scientific kind, it is rather the anatomy of the surgeon; there are many things in it which we would wish to see different; the book is large, and, perhaps, a bit untidy; it labours under the disability of attempting to combine a dissecting guide and a systematic anatomy, nevertheless, new editions of it appear every other year. Students purchase it, wholesale we might say, and in many places it is the recognised text-book. It seems but the other day that we reviewed the last edition in these pages, and now comes another hot haste on its heels—another edition in every sense of the word—improved and revised. There is no radical change in the plan of the work, it runs still on the same old lines, but its descriptions are brought more up to date than in former issues. Occasionally one part of an article is quite up to the times, while another part, retained from the older editions, is entirely out of harmony with the later teaching. There are still to be found in several places faulty nomenclature or inaccurate description. For example, that ramus of the os pubis which is nearest to the vertical—the ascending or superior ramus of most anatomists—is still called the horizontal ramus, a most unfortunate and most misleading misnomer, which is possibly accountable for the fact that nearly all students who depend on Gray for their osteology have no idea of the natural position of the os innominatum. Still, the depression corresponding to the tympanum on the upper surface of the petrous portion of the temporal bone is outside the eminence of the superior semicircular canal. As in the past, all the muscles that can possibly by any strain of description be brought to a thin border or oblique line or tubercle are still brought and heaped on the border line or tubercle, to the extreme confusion of the poor student. For example, see the attachments to the oblique line of the radius, the borders of the scapula, or the tubercle of the femur. Still the pectineus is supplied chiefly by the obturator nerve with "additional branches from the anterior crural or accessory obturator"—the two inner lumbricals of the foot are supplied by the internal plantar. The lower edge of the gluteus maximus is marked by a line from the side of the coccyx to the lower part of the great trochanter.

The lateral sinus runs horizontally outwards from the occipital protuberance, and so on in other parts.

On the other hand, there are added in this edition many things that please us, particularly in the way of illustrations. Most of them are drawn from the beautiful preparations in the museum of the Royal College of Surgeons of England, but we think the method in which these drawings have been reproduced is not generally very satisfactory; in this regard the old pictures in Gray, which we have been looking at for years, are much superior. In the old illustrations everything stands out quite distinctly, every structure is clear and definite, and the anatomy of the part catches the eye at once. In many of the new ones, on the other hand, clearness of detail is not a strong character; there is a great want of contrast, and as a result the main lines of the picture do not strike one so decidedly. A notable exception to these remarks is the new picture of the lumbar sympathetic, taken from Henle, which is excellent. There are also many other useful new pictures of the heart, of the organs of generation—a decided advance on the old ones—of the abdominal viscera, although good pictures of the spleen, pancreas, and suprarenals are still wanting. Several diagrams of the cranial nerves after Flowers have been added, which we fear the student will not find very useful.

On the whole, the book is very considerably improved in the present edition; possibly the advance might be more uniform. Some regions seem to have been looked after more carefully than others; but taking the whole result, it is decidedly satisfactory.

Gray's Anatomy can truthfully be said to be a good, useful work, which tells its tale clearly and simply. It embraces the whole of human anatomy, and it particularly dwells on the practical, or applied, aspect of the subject, so that it forms a most useful, intelligible, and practical treatise for the student and general practitioner.

TYPHUS IN NEW YORK.

FROM January 1st to April 1st, 1893, there were 328 cases of typhus fever in New York city. Of the victims 316 were men and only 12 women. One hundred and eighty-one were between the ages of twenty-five and forty-five. One hundred and nineteen died.—*Medical Record.*

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—George H. Kidd, M.D., F.R.C.S.I.
General Secretary—W. Thomson, F.R.C.S.I.

SECTION OF PATHOLOGY.

President—Prof. J. Alfred Scott.

Sectional Secretary—J. B. Story, F.R.C.S.I.

Friday, November 3, 1893.

The President in the Chair.

The President (Prof. J. Alfred Scott) delivered his opening Address on the Micro-chemistry of Cells in relation to the Theory of Immunity.

Favus: Spina Bifida Occulta.

Dr. J. O'Carroll next exhibited a patient suffering from favus. He said that she was admitted originally to the Children's Hospital, Temple-street, suffering from cough. She has now a fairly typical favus eruption on the head, which was more evident that night because the head was poulticed for twenty-four hours so as to get rid of the crusts due to a concurrent eczema and pediculi. She had also a large tuft of hair on the sacral or lumbar region, and a peculiar deformity about the left scapula at its superior angle, looking like an exostosis. He was no authority on spina bifida, but he thought there was a deficiency in the lumbar region. It was interesting, however, to know that a little sister of hers had a large meningocele in that region. He thought that the one he exhibited would come under the name of spina bifida occulta. He could not tell whether the affection of the scapula was of the nature of a torticollis or not.

Large Coagulum Adherent to the Mitral Valve in a Case of Acute Rheumatism Fatal through Hyperpyrexia.

Dr. J. W. Moore read a paper on this subject. It will be found at page 507.

Dr. Frazer inquired if there was any possible history of gonorrhœa in the case.

Dr. Moore informed him that no such history was forthcoming.

Mitral Narrowing.

Dr. James Little next exhibited a specimen of mitral narrowing. He said that probably this heart would be of much interest to those who were engaged in the daily practice of their profession. It was a rather highly marked example of narrowing of the mitral orifice due to atheromatous change. It was taken from a man of sixty years of age, who had swelled feet, short breathing, and the various signs of mechanical congestion of the venous system. He was unable to time the murmur which he heard at the apex, but it was, he thought, occasionally systolic and occasionally pre-systolic. After death they found a very narrow mitral orifice with atheromatous changes in the cusps of the mitral valve.

The specimen was of interest to those who have to do with clinical medicine, because it helps them to explain causes.

The President said the specimen was one well worthy the attention of the members. It was an exceedingly rigid one, and exhibited great narrowing.

Round-cell Sarcoma.

Dr. M'Weeney showed a round-cell sarcoma which had been removed on the 10th October by Mr. Chance at the Mater Misericordiæ Hospital. The patient was a woman aged about fifty. Six years previously a tumour about the size of a duck's egg had been removed from the front of the tibia, also by Mr. Chance. That growth had been in existence for four years, and the patient described it as brown. No record of its microscopic structure exists. The present tumour was first noticed eleven months ago. It was situated on the inner side of the thigh, a little below the knee, embedded in the subcutaneous fat, and at the time of removal had attained the size of a large orange. The skin over it was thinned and stretched, but not infiltrated. To the naked eye the tumour presented a fleshy lobulated appearance. A nodule about the size of a walnut was removed at the same time from a point a few inches below the large tumour, with which its structure was identical. The microscopic examination showed that both growths were round-cell sarcomata with distinctly alveolar arrangement. The cells were large, with vesicular nuclei and an abundance of protoplasm, so that they bore a close resemblance to epithelial cells, and the resemblance was increased

by their arrangements in lengthily oval alveoli, whilst the stroma could hardly be traced between the individual cells. The nuclei contained granules which exhibited strong affinity for acid aniline stains, and bodies closely resembling the so-called cancer parasites could be seen. Numerous mitoses were visible, many of them being asymmetrical, and hyperchromatosis was of frequent occurrence.

The PRESIDENT said that these points were at present much debated by the Pathological Society of London. The great point in Ruffer's body was that it was an acid staining nucleus; but to his mind Dr. M'Weeney's specimens seemed larger than the ordinary coccidia.

Secondary Glaucoma.

MR. STORY exhibited sections of an eye removed from a healthy young man, who had subsequently lost the sight of his second eye from a similar affection. The globe was removed on account of secondary glaucoma (which had not as yet shown itself in the second eye). The angle of the anterior chamber was occluded, the pupil dilated, and some pigment adherent to the lens capsule. Thin, dark-coloured blood lay between retina and chorioid, and also in the vitreous cavity. The sections showed blood-clots partly organised on both sides of the retina, and at one place the retinal tissue merged directly into the organised clot.

The PRESIDENT said the attachment of the iris to the cornea would lead to blocking of the lymph channels, which was what Priestley Smith described as causing glaucoma.

Cystitis with Surgical Kidneys.

DR. E. J. M'WEENEY exhibited urinary organs from a case of cystitis with surgical kidneys. He said they were taken from a man who had gonorrhœa some twenty years before, and who suffered from stricture on and off. He came into the Mater one week ago with high fever, and was quite incapable of passing water. His bladder was aspirated twice over the pubes, and ultimately a catheter was passed, but in a few hours after he fell into a collapsed state, and before the end of two days was dead. On making a *post-mortem* examination, the prostate was found to contain a number of abscess cavities, from which pus came forth. There were numerous small prostatic calculi also. He endeavoured to make a chemical analysis of them, but the strong mineral acids had no effect on them. The bladder was greatly sacculated, so as to look like the interior of the left ventricle. The submucous tissue was converted into abscess cavities, from which pus welled forth. The kidneys also presented numerous spots of necroses, both in the cortex and running parallel with the course of the urinary tubules. He expected to find numerous micrococci, but on staining he could not find a single one. It seemed to be a case of chronic uræmia in which sudden symptoms developed.

The Section adjourned.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. MOORE, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

VITAL STATISTICS

For four Weeks ending Saturday, November 4, 1893.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Oct. 14	Oct. 21	Oct. 28	Nov. 4		Oct. 14	Oct. 21	Oct. 28	Nov. 4
Armagh -	14·0	7·0	14·0	7·0	Limerick -	22·5	23·9	18·2	19·6
Belfast -	28·3	26·6	20·3	20·5	Lisburn -	17·0	12·8	29·8	12·8
Cork -	16·6	22·8	18·7	19·4	Londonderry	12·6	7·9	17·3	20·4
Drogheda	30·7	13·2	13·2	26·4	Lurgan -	13·7	27·4	13·7	22·8
Dublin -	23·6	23·4	20·1	26·1	Newry -	20·1	28·2	16·1	28·2
Dundalk -	20·9	8·4	33·5	12·6	Sligo -	15·2	5·1	10·2	20·3
Galway -	15·1	7·6	34·0	18·9	Waterford -	37·5	22·5	22·5	30·0
Kilkenny	28·3	18·9	33·0	42·5	Wexford -	4·5	36·1	36·1	27·1

In the week ending Saturday, October 14, 1893, the mortality in thirty-three large English towns, including London (in which the rate was 17·9), was equal to an average annual death-rate of 18·2 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·4 per 1,000. In Glasgow the rate was 19·3, and in Edinburgh it was 18·5.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 23·6 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·7 per 1,000, the rates varying from 0·0 in six of the districts to 11·2 in Limerick—the 16 deaths from all causes registered in that district comprising 6 from measles and 2 from diarrhoea. Among the 144 deaths from all causes registered in Belfast are 2 from measles, 1 from scarlatina, 10 from whooping-cough, 2 from diphtheria, 7 from enteric fever, and 3 from diarrhoea. Of the 5 deaths in

Newry 1 was from measles and 1 from diarrhœa. Among the 5 deaths in Dundalk were 1 from diphtheria and 1 from enteric fever. The 6 deaths in Kilkenny comprise 1 from scarlatina and 1 from simple-continued fever.

In the Dublin Registration District the registered births amounted to 202—116 boys and 86 girls; and the registered deaths to 164—78 males and 86 females.

The deaths, which are 4 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·5 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted into public institutions from localities outside the district, the rate was 23·6 per 1,000. During the first forty-one weeks of the current year the death-rate averaged 26·7, and was 0·9 under the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 26, being 1 above the average for the corresponding week of the last ten years, but 10 under the number for the week ended October 7. The 26 deaths comprise 1 from measles, 1 from typhus, 1 from influenza, 3 from whooping-cough, 9 from enteric fever, 7 from diarrhœa, and 1 from erysipelas.

Thirty-one cases of enteric fever were admitted to hospital, being 4 over the admissions for the preceding week, but 7 under the number for the week ended September 30. Forty-two enteric fever patients were discharged, 4 died, and 195 remained under treatment on Saturday, being 15 under the number in hospital at the close of the preceding week.

Seven cases of scarlatina were admitted to hospital against 4 admissions in the preceding week: 9 patients were discharged, and 47 remained under treatment on Saturday, being 2 below the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 14 cases of measles (being an increase of 4 as compared with the number for the preceding week): 33 cases of this disease remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system, which had fallen from 18 for the week ended September 30 to 16 for the following week, further declined to 14—or 11 below the average for the corresponding week of the last ten years. The 14 deaths consist of 9 from bronchitis and 5 from pneumonia or inflammation of the lungs.

In the week ending Saturday, October 21, the mortality in thirty-three large English towns, including London (in which the rate was 18·8), was equal to an average annual death-rate of 18·4 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·6 per 1,000. In Glasgow the rate was 18·3, and in Edinburgh it was 19·4.

The average annual death-rate in the sixteen principal town districts of Ireland was 22·9 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·1 per 1,000, the rates varying from 0·0 in nine of the districts to 5·6 in Limerick—the 17 deaths from all causes registered in that district comprising 3 from measles and 1 from diarrhœa. Among the 135 deaths from all causes registered in Belfast are 5 from measles, 1 from scarlatina, 1 from typhus, 7 from whooping-cough, 1 from diphtheria, 4 from enteric fever, and 7 from diarrhœa. The Registrar of Wexford District observes: "Scarlatina is prevalent."

In the Dublin Registration District the registered births amounted to 185—88 boys and 97 girls; and the registered deaths to 164—78 males and 86 females.

The deaths, which are 5 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·5 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted into public institutions from localities outside the district, the rate was 23·4 per 1,000. During the first forty-two weeks of the current year the death-rate averaged 26·7, and was 0·8 under the mean rate in the corresponding period of the ten years 1883-1892.

Twenty-seven deaths from zymotic diseases were registered, being 1 over the number for the preceding week, and 3 above the average for the forty-second week of the last ten years. They comprise 2 from measles, 2 from influenza and its complications, 4 from whooping-cough, 9 from enteric fever,1 from choleraic diarrhœa, 6 from diarrhœa, and 1 from erysipelas.

Thirty-four cases of enteric fever were admitted to hospital, being 3 over the admissions for the preceding week: 22 convalescents from enteric fever were discharged, 7 died, and 200 remained under treatment on Saturday, being 5 over the number in hospital at the close of the preceding week.

Nineteen cases of scarlatina were admitted to hospital, against 7 admissions in the preceding week: 8 patients were discharged, and 58 remained under treatment on Saturday, being 11 over the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 15 cases of measles (being 1 over the number for the preceding week): 37 cases of the disease remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system, which had fallen from 16 for the week ended October 7 to 14 for the following week, rose to 30, or 4 above the average for the corresponding week of the last ten years. The 30 deaths comprise 20 from bronchitis and 4 from pneumonia or inflammation of the lungs.

In the week ending Saturday, October 28, the mortality in thirty-three large English towns, including London (in which the rate was 17·9), was equal to an average annual death-rate of 18·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·2 per 1,000. In Glasgow the rate was 19·9, and in Edinburgh it was 14·4.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 20·4 per 1,000 of the population, based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·4 per 1,000, the rates varying from 0·0 in ten of the districts to 8·5 in Lisburn—the 7 deaths from all causes registered in that district comprising 2 from diarrhœa. Among the 103 deaths from all causes registered in Belfast are 4 from measles, 3 from whooping-cough, 1 from diphtheria, 1 from enteric fever, and 7 from diarrhœa. The 13 deaths in Limerick comprise 1 from measles and 1 from diarrhœa, and the 11 deaths in Londonderry comprise 2 from diphtheria and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 153—78 boys and 75 girls; and the registered deaths to 138—73 males and 65 females.

The deaths, which are 29 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 20·6 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 20·1 per 1,000. During the first forty-three weeks of the current year the death-rate averaged 26·5, and was 1·0 below the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 23, being 1 over the average for the corresponding week of the last ten years, but 4 under the number for the week ended October 21. The 23 deaths comprise 2 from measles, 3 from influenza and its complications, 2 from whooping-cough, 1 from diphtheria, 8 from enteric fever, 4 from diarrhœa, and 1 from erysipelas.

The number of cases of enteric fever admitted to hospital was 23, being 11 under the admissions for the preceding week: 30 enteric fever patients were discharged, 1 died, and 192 remained under treatment on Saturday, being 8 under the number in hospital at the close of the preceding week.

Sixteen cases of scarlatina were admitted to hospital. This number shows a decline of 3 as compared with the admissions in the preceding week: 8 patients were discharged, 1 died, and 65 remained under treatment on Saturday, being 7 over the number in hospital on Saturday, October 21.

The hospital admissions for the week included, also, 11 cases of measles

(being a decrease of 4 as compared with the number of admissions for the preceding week): 42 cases of the disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 21, being 9 under the number for the preceding week, and 10 below the average for the 43rd week of the last ten years. The 21 deaths comprise 9 from bronchitis and 11 from pneumonia or inflammation of the lungs.

In the week ending Saturday, November 4, the mortality in thirty-three large English towns, including London (in which the rate was 20·5), was equal to an average annual death-rate of 20·2 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·7 per 1,000. In Glasgow the rate was 18·4, and in Edinburgh it was 18·3.

The average annual death-rate in the sixteen principal town districts of Ireland was 23·0 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 2·9 per 1,000, the rates varying from 0·0 in seven of the districts to 9·4 in Kilkenny—the 9 deaths from all causes registered in that district comprising 2 from scarlatina. Among the 104 deaths from all causes registered in Belfast are 2 from measles, 2 from whooping-cough, 1 from diphtheria, 1 from enteric fever, and 4 from diarrhœa. The 14 deaths in Limerick comprise 4 from measles and 1 from diarrhœa. The 12 deaths in Waterford comprise 1 from scarlatina, 1 from typhus, and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 168—84 boys and 84 girls; and the registered deaths to 180—95 males and 85 females.

The deaths, which are 2 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·8 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted into public institutions from localities outside the district, the rate was 26·1 per 1,000. During the first forty-four weeks of the current year the death-rate averaged 26·5, and was 1·0 under the mean rate in the corresponding period of the ten years 1883–1892.

Thirty-five deaths from zymotic diseases were registered, being 8 in excess of the average for the corresponding week of the last ten years and 12 over the number for the week ended October 28. They comprise 4 from measles, 2 from scarlet fever (scarlatina), 2 from influenza and its complications, 2 from whooping-cough, 2 from diphtheria, 10 from enteric fever, 1 from choleraic diarrhœa, and 6 (all of children under 5 years of age) from diarrhœa.

In the week ending Saturday, October 28, the mortality in thirty-three large English towns, including London (in which the rate was 17·9), was equal to an average annual death-rate of 18·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·2 per 1,000. In Glasgow the rate was 19·9, and in Edinburgh it was 14·4.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 20·4 per 1,000 of the population, based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·4 per 1,000, the rates varying from 0·0 in ten of the districts to 8·5 in Lisburn—the 7 deaths from all causes registered in that district comprising 2 from diarrhœa. Among the 103 deaths from all causes registered in Belfast are 4 from measles, 3 from whooping-cough, 1 from diphtheria, 1 from enteric fever, and 7 from diarrhœa. The 13 deaths in Limerick comprise 1 from measles and 1 from diarrhœa, and the 11 deaths in Londonderry comprise 2 from diphtheria and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 153—78 boys and 75 girls; and the registered deaths to 138—73 males and 65 females.

The deaths, which are 29 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 20·6 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 20·1 per 1,000. During the first forty-three weeks of the current year the death-rate averaged 26·5, and was 1·0 below the mean rate in the corresponding period of the ten years 1883–1892.

The number of deaths from zymotic diseases registered was 23, being 1 over the average for the corresponding week of the last ten years, but 4 under the number for the week ended October 21. The 23 deaths comprise 2 from measles, 3 from influenza and its complications, 2 from whooping-cough, 1 from diphtheria, 8 from enteric fever, 4 from diarrhœa, and 1 from erysipelas.

The number of cases of enteric fever admitted to hospital was 23, being 11 under the admissions for the preceding week: 30 enteric fever patients were discharged, 1 died, and 192 remained under treatment on Saturday, being 8 under the number in hospital at the close of the preceding week.

Sixteen cases of scarlatina were admitted to hospital. This number shows a decline of 3 as compared with the admissions in the preceding week: 8 patients were discharged, 1 died, and 65 remained under treatment on Saturday, being 7 over the number in hospital on Saturday, October 21.

The hospital admissions for the week included, also, 11 cases of measles

(being a decrease of 4 as compared with the number of admissions for the preceding week): 42 cases of the disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 21, being 9 under the number for the preceding week, and 10 below the average for the 43rd week of the last ten years. The 21 deaths comprise 9 from bronchitis and 11 from pneumonia or inflammation of the lungs.

In the week ending Saturday, November 4, the mortality in thirty-three large English towns, including London (in which the rate was 20·5), was equal to an average annual death-rate of 20·2 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·7 per 1,000. In Glasgow the rate was 18·4, and in Edinburgh it was 18·3.

The average annual death-rate in the sixteen principal town districts of Ireland was 23·0 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 2·9 per 1,000, the rates varying from 0·0 in seven of the districts to 9·4 in Kilkenny—the 9 deaths from all causes registered in that district comprising 2 from scarlatina. Among the 104 deaths from all causes registered in Belfast are 2 from measles, 2 from whooping-cough, 1 from diphtheria, 1 from enteric fever, and 4 from diarrhœa. The 14 deaths in Limerick comprise 4 from measles and 1 from diarrhœa. The 12 deaths in Waterford comprise 1 from scarlatina, 1 from typhus, and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 168—84 boys and 84 girls; and the registered deaths to 180—95 males and 85 females.

The deaths, which are 2 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·8 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted into public institutions from localities outside the district, the rate was 26·1 per 1,000. During the first forty-four weeks of the current year the death-rate averaged 26·5, and was 1·0 under the mean rate in the corresponding period of the ten years 1883–1892.

Thirty-five deaths from zymotic diseases were registered, being 8 in excess of the average for the corresponding week of the last ten years and 12 over the number for the week ended October 28. They comprise 4 from measles, 2 from scarlet fever (scarlatina), 2 from influenza and its complications, 2 from whooping-cough, 2 from diphtheria, 10 from enteric fever, 1 from choleraic diarrhœa, and 6 (all of children under 5 years of age) from diarrhœa.

The number of cases of enteric fever admitted to hospital was 23, being equal to the admissions for the preceding week, but 11 under the number for the week ended October 21. Thirty-seven enteric fever patients were discharged, 2 died, and 176 remained under treatment on Saturday, being 16 under the number in hospital at the close of the preceding week.

Only 12 cases of scarlatina were admitted to hospital against 16 admissions for the preceding week and 19 for the week ended October 21. Six patients were discharged, 2 died, and 69 remained under treatment on Saturday, being 4 over the number in hospital at the close of the preceding week.

There has also been a decline in the cases of measles treated in hospital, the admissions for the week being 6 only, against 11 for the preceding week and 15 for the week ended October 21, and the number under treatment at the close of the week having fallen from 42 on Saturday, October 28, to 26 on Saturday, November 4.

Thirty deaths from diseases of the respiratory system were registered, being 9 over the number for the preceding week, but 2 under the average for the 44th week of the last ten years. They comprise 22 from bronchitis and 4 from pneumonia or inflammation of the lungs.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of October*, 1893.

Mean Height of Barometer, - - -	29·855 inches.
Maximal Height of Barometer (on 23rd, at 9 a.m.), -	30·507 ,,
Minimal Height of Barometer (on 4th, at 9 a.m.), -	29·061 ,,
Mean Dry-bulb Temperature, - - -	48·8°.
Mean Wet-bulb Temperature, - - -	46·5°.
Mean Dew-point Temperature, - - -	44·0°.
Mean Elastic Force (Tension) of Aqueous Vapour, -	·293 inch.
Mean Humidity, - - - - - -	84·2 per cent.
Highest Temperature in Shade (on 21st), - -	67·7°.
Lowest Temperature in Shade (on 31st), - -	31·7°.
Lowest Temperature on Grass (Radiation) (on 31st)	24·9°.
Mean Amount of Cloud, - - - - -	51·0 per cent.
Rainfall (on 16 days), - - - - -	1·033 inch.
Greatest Daily Rainfall (on 14th), - - -	·322 inch.
General Directions of Wind - - -	W., S.W.

Remarks.

A favourable month, of average mean temperature and atmospheric ressure. There was an overwhelming prevalence of westerly and south-

westerly winds, which kept the rainfall far below the average on the leeward side of the Dublin and Wicklow mountains—Thus, it was only 7·10 inch at both Greystones and Killiney; 1·033 inches in Dublin city; 1·140 inches at the Royal Botanic Gardens, Glasnevin; and 1·190 inches at the Ordnance Survey Office, Phœnix Park. Free of the mountains inland, the rainfall was much heavier. Even in London, not less than 3·900 inches of rain fell during the month. On the 20th and 21st there was a remarkable wave of heat. On the 30th and 31st the cold was equally decided.

In Dublin the arithmetical mean temperature (50·0°) was slightly above the average (49·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 48·8°. In the twenty-eight years ending with 1892, October was coldest in 1892 (M. T. = 44·8°), in 1880 (M. T. = 45·4°), and in 1885 (M. T. = 45·5°), and warmest in 1876 (M. T. = 53·1°). In 1886, the M. T. was as high as 52·0°; in 1879 (the "cold year"), it was 49·7°; in 1887, it was as low as 47·3°; in 1888, it was 49·1°; in 1889, it was only 48·1°; in 1890, it was 51·7°, and in 1891, 49·5°. October, 1892, beat the record for coldness, but October, 1893, has proved of normal warmth.

The mean height of the barometer was 29·855 inches, or 0·015 inch above the corrected average value for October—namely, 29·840 inches. The mercury rose to 30·507 inches at 9 a.m. of the 23rd, and fell to 29·061 inches at 9 a.m. of the 4th. The observed range of atmospherical pressure was, therefore, as much as 1·446 inches—that is, a little less than an inch and a half.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 48·8°, or 6·0° below the value for September. The arithmetical mean of the maximal and minimal readings was 50·0°, compared with a twenty-five years' average of 49·7°. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·485), the value was 49·8°, or 0·3° above the average mean temperature for October, calculated in the same way, in the twenty-five years, 1865–89, inclusive (49·5°). On the 21st, the thermometer in the screen rose to 67·7°—wind, S.W.; on the 31st the temperature fell to 31·7°—wind, N.W. The minimum on the grass was 24·9°, also on the 31st. On one night the thermometer sank below 32° in the screen, and on eight nights frost occurred on the grass. The corresponding figures in 1892 were 4 and 13 nights respectively.

The rainfall was only 1·033 inch, distributed over 16 days—the rainfall was considerably, while the rainy days were slightly, below the average. The average rainfall for October in the twenty-five years, 1865–89, inclusive, was 3·106 inches, and the average number of rainy days was 17·6. In 1880 the rainfall in October was very large—7·358 inches on 15 days. In 1875, also 7·049 inches fell on 26 days.

On the other hand, in 1890, only ·639 inch fell on but 11 days, in 1884 only ·834 inch on but 14 days; and in 1868 only ·856 inch on 15 days. In 1888, the rainfall was 1·227 inches on 16 days, and in 1889 no less than 4·853 inches fell on 22 days. In 1891, 3·590 inches fell on 13 days; and in 1892, 2·535 inches on 17 days. From these figures it will be seen that October, 1890, proved the driest on record for more than a quarter of a century at least, while the rainfall in October, 1893, was only *one-third* of the average.

A lunar corona was seen on the 24th. There was an aurora borealis on the evening of the 29th. High winds were noted on 10 days, and attained the force of a gale on two occasion—the 25th and 28th. The atmosphere was more or less foggy in Dublin on the 7th, 18th, and 20th. Lightning was seen on the evenings of the 3rd, 4th, 5th, and 30th. Hail fell on the 26th.

The week ended Saturday, the 7th, proved to be one of low atmospherical pressure, low temperature, and changeable showery weather, the showers being from time to time accompanied by thunder and lightning in many places. The most important reduction of pressure occurred on Tuesday and Wednesday—at 8 a.m. of the latter day the barometer was below 29 inches throughout a large triangular area covering two-thirds of Scotland, the north of England, and the north-eastern third of Ireland. Gradients were nowhere steep, and so the winds—although varying much in direction—were not strong except off the south of Ireland and in the English Channel. Connected with this large primary cyclonic system, were a number of shallow secondary depressions, which caused thunder and hail—as well as rain—showers as they passed across the country. Temperature was not so low in the S. and S.E. of England as in other parts of the kingdom, and on Sunday the thermometer rose to 67° at Loughborough and Cambridge, 66° in London and at Dungeness, and 65° at Hurst Castle. On the other hand, a minimum of 28° was registered at Nairn, in Scotland, on Wednesday morning. In Dublin the mean height of the barometer was 29·362 inches, pressure being observed to vary between 29·624 inches, at 9 p.m. of Sunday, (wind W.) and 29·061 inches, at 9 a.m. of Wednesday (wind also W.). The corrected mean temperature was 49·3°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 47·2°. On Sunday the thermometer rose to 59·2°, on Saturday it fell to 37·9° in the screen. The rainfall was ·168 inch on five days, ·051 inch being measured on Wednesday. Lightning was seen on the evenings of Tuesday, Wednesday and Thursday. The prevailing wind was westerly. The weather was much more broken in England than in Ireland during the week.

Atmospherical pressure was unsteady during the week ended Saturday, the 14th, and therefore the weather was unsettled and changeable. Until Friday, when a very warm, moist south-westerly, or equatorial current

began to pass over Ireland, the air was cold and rather dry in this country. In England, on the contrary, heavy falls of rain took place, accompanied by thunder and lightning and at times by strong and squally S.W. winds. In London, from one inch to an inch and a quarter of rain fell on Monday night, and the total fall for the three days ending 8 a.m. of Thursday was no less than 1·84 inches. These heavy rains were due to the passage up the English Channel of two depressions in quick succession—one on Monday, the other on Wednesday. At this time, although the barometer was rather low, bright, sharp weather prevailed in Ireland, showers occurring at intervals. On Thursday an area of high pressure passed over this country. The weather turned colder and became fine and dry in England, while in Ireland a warm S.W. wind arrived on Friday, causing dull, rainy weather, and an increase of temperature amounting to from 20° to 25° Fahr. The result in Dublin was that on Saturday the interior of most houses became dripping wet, from the condensation as dew of the vapour of the warm air current upon the walls, ceilings, and floors, chilled by the previous cold weather and remaining below the point of saturation or the dew point. Rain fell heavily on Saturday afternoon. In Dublin the mean height of the barometer was 29·846 inches, pressure ranging between 29·683 inches at 9 a.m. of Sunday (wind W.), and 30·160 inches at 9 p.m. of Thursday (wind W.N.W.). The corrected mean temperature was 48·8°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was also 48·8°. On Tuesday the thermometers in the screen fell to 37·1°, on Saturday they rose to 65·0°. The rainfall was ·431 inch on three days, ·322 inch being measured on Saturday. The prevalent winds were W. and S.W.

Taken as a whole, the weather of the week ended Saturday, the 21st, was distinctly favourable and of a mild type—indeed, both at the beginning and at the end temperature was much above normal, although the minima were low on Tuesday night in Scotland and parts of both England and Ireland, and on Wednesday and Thursday nights in central England. On the other hand, Friday night proved abnormally warm in many places, and in Dublin the thermometer actually rose to 67·7° (nearly 68°) in the screen. Comparatively little rain fell, except in the south of Ireland and over the south and east of England as well as in parts of the English Midlands on Tuesday, when a shallow depression travelled in a direction from W.N.W. to E.S.E. from the mouth of St. George's Channel across the S.W. of England to the N.E. of France. This rain-system caused falls of 1·25 inches at Roche's Point, 1·57 inches at Hurst Castle, where a storm of thunder and lightning occurred at 1 30 a.m. of Wednesday, and ·75 inch in London. The rainfall was ·67 inch at Parsonstown, but only ·07 inch in Dublin. As this disturbance passed off, an anticyclone formed in the S., and the barometer rose to 30·40 inches or slightly more on Friday morning over the S. of England, N. of

France, and centre of Germany. Along the north-western face of this anticyclone a very warm south-westerly current spread over Ireland on Friday, the temperature becoming singularly high at night. Saturday was first fine and warm, afterwards rainy and much cooler. In Dublin the mean height of the barometer was 30·099 inches, pressure ranging between a minimum of 29·762 inches at 9 p.m. of Sunday (wind W.S.W.) and 30·370 inches at 9 a.m. of Thursday (wind S.W.). The corrected mean temperature was 55·4°. The mean dry bulb reading at 9 a.m. and 9 p.m. was 54·5°. On Saturday the thermometers in the screen rose to 67·7°; on Wednesday they fell to 41·0°. The rainfall was ·238 inch on four days, ·098 inch being measured on Saturday. The prevailing winds were W. and S.W. A wet fog prevailed on Wednesday morning, and there was a smoke fog on Friday.

At first fine and dry, except in the S. and S.E. of England, where Sunday was dull and rainy, the weather afterwards became squally, showery, and generally changeable during the week ended Saturday the 28th. In the earlier period, an anticyclone lay over the S. of Ireland, the barometer rising on Monday morning to 30·55 inches at Valentia Island and Roche's Point, 30·52 inches at Parsonstown, and 30·51 inches in Dublin. This high pressure system soon moved away south-eastwards, and at the same time decreased in size. Simultaneously, a general reduction of atmospheric pressure took place in the N. and N.W., causing steeper gradients for westerly winds—that is, winds between S.W. and N.W., and showery, unsettled weather. On Tuesday and Wednesday rain fell heavily over the N. of Ireland and S. of Scotland, and in smaller quantities over the greater part of the kingdom. Hail fell in many places and lightning was seen at Belmullet on Wednesday night. On Thursday evening the moon shone with unusual lustre. A decided rise of temperature occurred on Friday, while Saturday was stormy with frequent showers, and, at times, rainbows. In Dublin the Mean height of the barometer was 30·038 inches, pressure rising to 30·507 inches at 9 a.m. of Monday (wind W.) and falling to 29·638 inches at 4 p.m. of Saturday (wind W.). The corrected mean temperature was 49·6°. The mean of the dry bulb readings at 9 a.m. and 9 p.m. was 49·2°. On Wednesday the thermometer rose to 59·8° in the screen; on Friday, it fell to 38·2°. The rainfall was ·184 inch on three days—·109 inch being registered on Wednesday and ·041 inch on Saturday. The prevailing wind was westerly.

The last three days were cool and fair in Ireland—an aurora borealis with carmine streamers was seen about 6 p.m. of Sunday, the 29th, and there was sheet lightning on the evening of the 30th. Sharp frost occurred on the 31st.

The rainfall in Dublin during the ten months ending October 31st amounted to 16·141 inches on 138 days, compared with 12·366 inches on

123 days during the same period in 1887, 19·219 inches on 147 days in 1888, 24·789 inches on 169 days in 1889, 21·494 inches on 162 days in 1890, 21·610 inches on 148 days in 1891, 22·445 inches on 167 days in 1892, and a twenty-five years' average of 22·840 inches on 160·4 days.

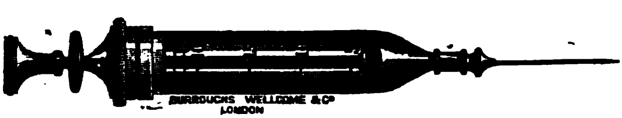
At Knockdolian, Greystones, Co. Wicklow, the rainfall in October amounted to only ·710 inch on 15 days. Of this quantity ·225 inch fell on the 17th. The rainfall at Greystones in October, 1889, was no less than 6·935 inches on 22 days, or more than 11 times as great as the fall in October, 1890, when only ·600 inch fell on 13 days. In 1891, 5·122 inches fell on 14 days, and in 1892, 3·340 inches on 15 days. From January 1st, 1893, up to October 31st, rain fell at Knockdolian on 133 days to the total amount of 17·801 inches. In 1892, the rainfall of the corresponding ten months was 27·223 inches on 140 days.

At Cloneevin, Killiney, Co. Dublin, the rainfall in October, was ·710 inches on 14 days, compared with 3·040 inches on 17 days in 1892, and an eight years' average of 3·201 inches on 16 days. Since January 1, 1893, 14·61 inches of rain have fallen at this station, compared with an average of 20·353 inches in the previous eight years.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

The "Pure Aluminium" Hypodermic Syringe.

This is a new aseptic syringe, which has been patented by Messrs. Burroughs, Wellcome, & Co., of Snow Hill Buildings, London, E.C. It is specially adapted for use with all solutions for subcutaneous medication, and is not affected by any climatic condition. The perfectly aseptic packing with which the syringe is fitted does not require any further lubrication than simply moistening with a little water, and when removed from the piston rod it may be thoroughly cleansed and purified—the barrel after being rinsed out with absolute alcohol is rendered perfectly aseptic.



The packing may be readily manipulated by adjusting the small nut situated directly beneath the knob of the piston rod. The glass barrel of the syringe is graduated on one side in minims indelibly marked in black, and on the other with a metric scale—one cubic centimetre divided into millimetres—in red. It is well protected by a unique sheath of

pure aluminium which renders the syringe absolutely incorrodible, and it is also less than half the weight of the usual heavily cased instruments.

As a syringe for dental practice it will be found very efficient in that a solution of any temperature may be employed, and considerable pressure brought to bear upon the piston rod without any danger of injury or disarrangement to the packing. The syringe can be quickly and easily taken to pieces, and may be readily and perfectly sterilised with absolute alcohol.

To fit new packing (or for the purpose of cleaning) the case of the syringe should be firmly held between the thumb and finger close up to the mount; then unscrew the mount; withdraw the piston; unscrew the knob; unscrew the regulating nut; and slip the inner rod out of the piston. The packing can then be removed and a new one affixed.

After the syringe has been used the regulating nut should be unscrewed a little, and only the cylinder of the piston raised, so that the packing can resume its usual size after the pressure has been removed.

The syringe should be well rinsed with cold water after a solution has been employed.

The piston should not be allowed to rush back forcibly when drawn down with the finger held over the nozzle, as it may fracture the tube.

This Aluminium Hydropathic Syringe is supplied, with two regulation needles, at 7s. each, or with one regular and one dental needle, at 8s. each. Extra graduated barrels to fit syringe are supplied at 1s. each. The packings are 2s. per dozen.

THE REUBEN HARVEY MEMORIAL PRIZE.

We would draw attention to the announcement that the fourth award of this Triennial Prize will be made on July 1st, 1894. The competition for the prize is open to all Students of the various Schools of Medicine in Dublin which are recognised by the Medical Licensing Bodies in Ireland, and also to Graduates or Licentiates of these Bodies of not more than three years' standing at the time of the award. The Prize—£25 in value—will be awarded to the writer of the best essay, on a subject to be selected by the candidate, evidencing original research in Animal Physiology, or Pathology; the essay to be illustrated by Drawings or Preparations. The essays, bearing fictitious signatures, are to be lodged with the Registrar of the Royal College of Physicians of Ireland, Kildare-street, Dublin, on or before June 1st, 1894. We trust that there will be keen competition for this prize, which was founded to perpetuate the memory of one of the ablest of modern physiologists—Reuben Joshua Harvey, M.D., of the Carmichael College of Medicine, Dublin.

INDEX

TO THE NINETY-SIXTH VOLUME.

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